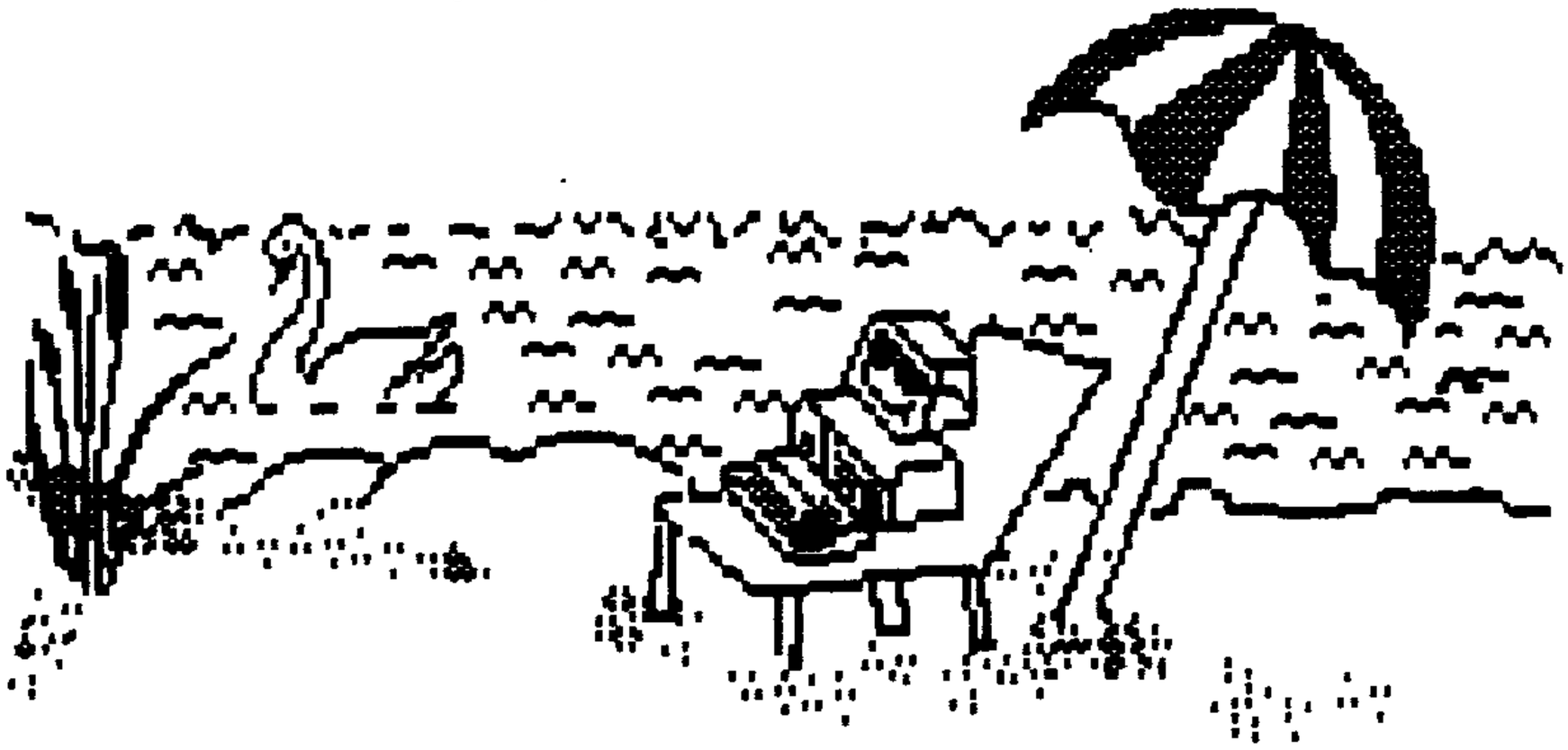
THE CHICAGO TI USERS GROUP PRESENTS THE CHICAGO TIMES

THE NEWSLETTER OF THE CHICAGO AREA TI-99/4A USER'S GROUP

SUPER SUMMER ISSUE

August 31, 1987
EDITOR: Carole Goldstein



THE SEPTEMBER MEETING. . .

will be held in the Fireside Lounge at Triton College from 1:00 to 3:00 on Sept. 12. Featured at this meeting will be the latest from Funnleweb and FAST TERM plus lots of surprises.

→ GENEVE 9640 HAS ARRIVED ←

GUEST SPEAKERS!

VENDORS!

CHICAGO TI USERS GROUP

PRESENTS THE

DOOR PRIZES!

SEMINARS!

5TH ANNUAL TI FAIRE

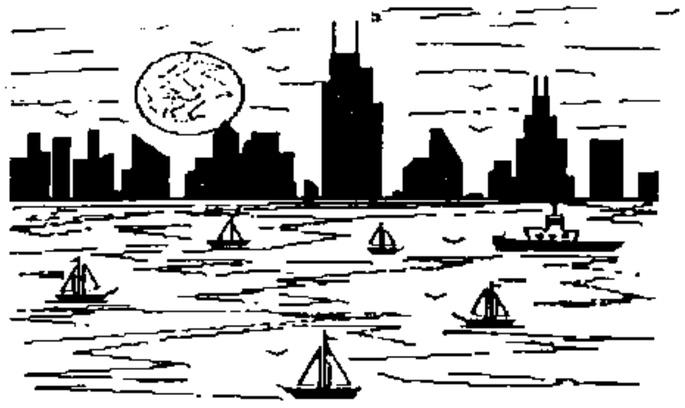
TRITON COLLEGE

2000 5TH AVE

RIVER GROVE, IL

NOV. 7TH

9 TO 6



FOR INFO ON THE FAIRE OR ON GROUP MEMBERSHIP WRITE :
CHGO. TI USERS GROUP P.O. BOX 578341
CHGO. IL. 60657

OR CALL OUR HOTLINE 312/657-1093

GEN. ADM.

3.00

IN THIS ISSUE...

THE DISASSEMBLY	Dave Wakely	Page 5
BASICALLY YOURS	Rich Klein	Page 8
FINANCIAL UPDATE		Page 14
MEMBERSHIP CHAIRMAN SPEAKS	Don Jones	Page 15
PROCESSED DATA	Sandy Bartels	Page 19
FAIRE UPDATE	Marcy Brun	Page 20
SOFTWARE REVIEW	Jack Topham	Page 21
EVOLUTION OF A FAILURE-IBM	Chris Bobbit	Page 24
INTRODUCTION TO THE GENEVE	Chris Bobbit	Page 28
INITIAL REACTIONS TO GENEVE	Carole Goldstein	Page 34
BASIC ASSEMBLER	Steve Peacock	Page 36
FROM THE OTHER ORPHANAGES	Jack Topham	Page 43
COMPUTER SHOPPER INDEX	Anne Dhein	Page 45
HIGH RES GRAPHICS & THE 994A	Anne Dhein	Page 51
CONVERTING GRAPHICS TO TI ARTIST	Chris Bobbit	Page 59
FULL DUPLES	Irwin Goldstein	Page 62
REVIEW-HIGH GRAVITY	John Behnke	Page 63
PRACTICAL PROGRAMMING PRACTICES	John Behnke	Page 64
THE PASCAL ADVANTAGE	Mike Maksimik	Page 67
HARDTImes	Al Stump	Page 71
REMarks	Carole Goldstein	Page 76

Contributing artists: Buzz Krantz, Dan Gronowski, Danny Goldstein, Anne Dhein

BULLETINS:

UG HOT LINE NUMBER IS (312)657-1093.

The Beginners SIG and Pascal SIG will meet shortly after the meeting.

Bill Hoffman is interested in starting a C Sig. Anyone interested please let Bill know either in person or on the Group PBS.

MEETING DATES FOR THIS COMING YEAR ARE AS FOLLOWS:

SEPT 12 OCT 3 NOV 7 TI FAIRE DEC 5

The Chicago TImes is published 10 TImes a year, monthly, except during June and July. Chicago TImes is not affiliated with Texas Instruments in any way and is supported only by its subscribers and advertisers. Subscriptions are free with membership in the Chicago TI99/4A User's Group. The Chicago TImes is also distributed free to any other User's Group that wishes to reciprocate. Articles contained herein may be re-printed by another User's Group Publication provided credit is given to the Chicago TImes as the original source of the article. Comments and letters are welcome, as is the submission of original articles and programs.

EDITORS NOTE - Group elections will be held at the end of the year. At this time we are taking nominations for group President, Vice President, Secretary, and Treasurer. Please bring your written nominations to the September meeting or mail them to the Group P.O. Box by September 15 if you are unable to attend.

MCCANN SOFTWARE PRESENTS
TPA TOOLBOX
including

Page Manager -- Forms Tool
Sign Tool -- Font Conversion
Border Builder -- Fonts & Borders

McCann Software continues to support the TI/99-4A by building tools for the art of pagemanship. TPA Toolbox adds five new dimensions to an already powerful system, The Printer's Apprentice. Each program of TPA Toolbox works and prints on its own and each is compatible with The Printer's Apprentice.

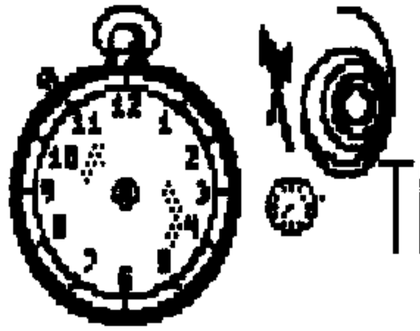
TPA Toolbox contains these tools: Page Manager--a graphical page design system interfacing directly with the TPA Scheduler. Sign Tool--uses regular TPA fonts and makes them a whole palette of sizes and shapes for creating eye catching signs and headlines. The Font Conversion Tool--converts fonts, instances and pictures. Border Builder--takes the blues out of border creation (20 borders included). Forms Tool--draws blank forms, ledgers or graph papers and virtually anything that can be drawn using rectangular boxes.

This page was created using only The Printer's Apprentice, TPA Toolbox and fonts from TPA Fonts Disk 1.

TPA Toolbox requires: 32K memory, Disk System and either Editor/Assembler or TI Extended BASIC. Works with TI-99/4A printer, Gemini 10X and Epson compatible graphics printers including Panasonic 1091, Star NX and IBM.

HUNTER ELECTRONICS/ONLY $20

HUNTER ELECTRONICS 312-766-9503
4N370 PINE GROVE OPEN BY APPT.
BENSENVILLE,IL.60106 SEPT.1987
HOME OF PERSONALIZED SERVICE
SPECIALS:1/2 HT.DS/DD DRIVES-$99
SPECIALS:STAR NX-10 PRINTER(ALSO NP)
GENEVE COMPUTER-IN STOCK-CALL
FOR COMPLETE CATALOG-CALL OR WRITE



THE DISASSEMBLY

Dave Wakely

Happy New Year; The auction; More unending Myarc news; Other THings:

Hello again, 99/4A owners! Your User's Group is back again to wrap up it's seventh year and start it's eighth year of providing software, news, and events related to "The Computer that Refuses to Die!" Why? Because we like you (and you paid your dues!)

Those of you who are new (and yes, we still get new members), may be wondering what happened to this newsletter over the summer. If you missed previous explanations, this group takes the summer off to poop out from the previous year, and to prepare and plan for the next. So Far I don't see many large changes in our group format for this year, and that means you can continue to count on us for information, reviews, demos, etc. as always. All this activity about a computer that by my reckoning has now been "dead" about as long as it was alive. It was some time in 1979 that Texas Instruments introduced the original TI-99/4, and it is now almost four years since TI called it quits. Would you rather have the software and hardware available then, or now? It's no contest, the TI is quite arguably better off dead than alive!

ARE YOU GLAD TO SEE ME, OR IS THAT A BID?: The last time we got together, the group held its second annual auction. For a while in the spring following the announcement, I didn't think that we were going to come close to last year's level of donations. But, as usual, this group is not to be underestimated. By the start of the June meeting, the number of items donated significantly exceeded the amount at the '86 auction, and a record amount of money was placed into the group treasury. Most of you could have advertised those items for sale, making a few dollars for yourself, but instead you gave them to us. This is the spirit of cooperation which continues to make this group healthy, vital, and assured of another interesting and informative year ahead. I have said in this column before that this is YOUR group, and judging by the level of "volunteerism" we have, you believe it. Under these conditions I can assure you that the TI will never die. Here's to you and another great year ahead.

SMALL CHANGE(S): One change this year is that Jack Topham has taken over as program coordinator. Jack will be lining up the speakers and presentations for each meeting, and he will announce the upcoming program in the newsletter. For our many non-attending members, I will be continuing my practice of attempting to keep you current as to what we do at the meetings as well as to relay any relevant information which comes up. In other words, sort of a "review" of the previous meeting. I can't promise that it will be as good as being there, but I will attempt to get you the information you need. I will also be taking my usual serious and not-so-serious looks at the TI community in Chicago and elsewhere. It's a

rough job, but someone's got to do it.

SORRY ABOUT THAT, CHIEF: I really intended to finish the index of the Chicago Times, 1982-1987, this summer, really I did, but, ah, just as I had it all done, uh, thieves, yeah, thieves, broke into my house and took all my floppy disks, they did, and ah, then they kipnapped me, yeah, and took me to, ah, South America, yeh, where they held me hostage and Reagan tried to get me released by selling them arms, but, ah, they all already had arms, yeah, and then I finally escaped and ah, made my way back to Chicago by canoe, yeah canoe, and there was just enough time to finish this column. So the index is with those thieves, yeah, thieves, that's the ticket!

WHAT DO YOU MEAN YOU'RE NOT GOING?: For the past several years I have fought my way through the maddening crowd to see what new products might be available for the TI at the Consumer Electronics Show (CES), held twice a year, one of which is in June in Chicago. For the past several years this could also be termed The Incredible Shrinking Computer Show (ISCS), in that every year the number of software vendors has gotten smaller, and of course less and less was available for the TI. The last few years saw a small, fanatical, and perhaps pathetic band of TI users attempting to track down a) Randy Holcomb; b) Lou Phillips; c) The new computer; d) Anything remotely relevant. It was sometime at the end of the CES that I passed my humiliation threshold, and at the same time reasoned that perhaps if I stayed away, this time something might turn up. Perhaps one of the TI hoards has something on the CES in this newsletter, but word was that once you found Lou Phillips this year at the CES, you found it all as far as TI is concerned. Of course other reasons to go were to see the latest synthetic-drum, synthetic-guitar, artificial processed music machine. Fans of Ernie Kovacks will be saddened to hear that the Nairobi Trio have been digitized. And so it goes...

OUR LOSS: I was shocked and saddened to read in MICROpendium that Doyle Bynum recently passed away at age 63. Doyle was the father of Don Bynum, who was the former head of the TI Home Computer Division and the featured speaker at our second annual Faire (1984). Doyle was also at that Faire, having driven up from Texas with Don in their camper van. Doyle was a dedicated TI'er and frequent contributor to The Source. He will be missed by all who knew him. As suggested in MICROpendium, I will suggest to our executive board that a memorial conribution be sent from the group to the Alumni Association of McMurray College in Abilene, Texas.

JUST WHAT YOU WANTED TO HEAR: Myarc. 9640. It's here. Like the last two years. M-DOS? Working? NO! Partially complete. More Promised. See it? Believe it. Problems? Lots. Bugs? Many. So? What else is new? Film at 11...

SubrouTines: It appears that I had it all wrong last year. That Triton Bridge Box contraption is actually compatible with the SUBARU Turbo-XT! It turns out that one of the many connectors goes to the dashboard cigarette lighter, allowing "computing on the road". And there I was, misinterpreting all that talk about the "drives"! I still have to give it a mixed review, though. While the amount of screen glare is totally unacceptable, this unit does allow the admirable practice of "top-down" programming!!!...No one named Grant Schmalgemeier bothered me all summer. Whoever was responsible for this, bless you...

The Midwest Computer Shows

Presents
the

Computer and Electronics Show & Sale

Saturday & Sunday, Sept. 26, 27, 1987
10 A.M. to 4 P.M.

Admission $3.00

DuPage County Fairgrounds, Wheaton, IL
Manchester & County Farm Road

FANTASTIC SAVINGS ON:

Personal Computers
Printers
Video Monitors
Business Computers
Disk Drives
Word Processing Software
Printer Paper
Add-On Memory
Plotters
Joy Sticks
Computer Furniture
Business Software
Computer Books
Diskettes
Educational Software
Modems
Game Software
Printer Ribbons
Utility Software
Computer Hobbyist Items

MAJOR BRAND NAMES

Apple
IBM
Commodore
Atari
Diablo
AST Research
Relax Technology
Okidata
Lotus
Epson
Amdek
NEC
Maxell
Brother
Leading Edge
Quadram
Hayes
Verbatim
Microsoft

Don't Miss This Sale
$10 — $100 — Maybe Even $1,000's in Savings

PC Related Seminars Daily
Also Daily Drawing—Up To $300.00 In Value

FEATURING
Hardware • Software • Close Outs
Discounted Items • Overstock

For Information Write or Call
Midwest Computer Shows, Inc.
6N351 Keeney Road
Roselle, IL 60172
1-800-443-8693

Schedule of Coming Shows
Dec. 26-27 March 26-27

BASICALLY YOURS

Rich Klein

And Baby Makes Four...

Many of you are finishing summer projects about now. My wife and I just finished a project we started last fall. Her name is Kathleen and we are understandably proud of her. As far as we're concerned, she IS the prettiest baby around.

I'm sure many of you have had a summer which was as happy and productive as ours, but the receipt of this issue marks the approach of cooler weather, and with that, the prospect of increased indoor activities. Since you are members of this group, I feel safe in saying that the TI99/4A computer will occupy a good portion of the time allocated for those activities. I hope I can be of some help in that area.

The purpose of this column is to enlighten, enrich and illuminate where TI Basic and Extended Basic is concerned. If you are experiencing difficulties working out a way to do something or are just interested in info on an area of Basic computing, drop me a line in care of this newsletter. I'll do my best to help you out. In some cases there will be no questions to answer, in which case I'll devote that month's column to topics I think are of general interest. If you have an area of interest to you, this could be a way to find out more about it.

Don't feel that your question or problem is too remedial. A lot of you have had your computers for some time now, but are just beginning to wonder about the programming aspects of it. There has been a lot one could do with the TI without needing to program. TI did release a lot of software from general interest and games, to very specialized applications. In addition to that, during and especially since TI's involvement with the Home Computer, third party vendors have produced whatever TI lacked. Because of this, many of you have felt no need to program. For those of you who have decided to give it a shot, this column, and others within these pages, are for you.

This month, I thought we could cover generating a mailing list and producing labels from that list. This is not necessarily something you would use every day, or even at all, but it does illustrate the way to pack information into string variables and then later extract them and use them.

To begin, one of the most compact ways to store information is in what I'll call a coded string. This is simply a field of information preceded with a byte that indicates its length. Since TI's can handle string lengths of 255 bytes or less, and can contain any character with an ASCII value from zero to 255, then it is a simple matter to precede each field of information with an ASCII value to indicate its length.

"What is an ASCII value?", you might ask. An ASCII value is merely an ASCII character. Each character is identified with a number from 0 to 255. Some ASCII characters are used to represent the letters of the alphabet; some represent numerals; and others are used to control telecommunications and printers. All that with a set of numbers from zero to 255.

We can also use the ASCII set for our own purposes. Since each ASCII character is represented in a single byte with a value of 0 to 255, and a TI string can be only 255 bytes long, maximum, then we can use the ASCII set to indicate any string length using only one byte! This beats the eight byte floating point numbering the TI uses.

Let me illustrate. If you use the LEN() function to set the numeric variable "A" to be equal to the length of a field you're working on and then do something like:

```
100 PRINT #1:A;F$
```

you would, in all likelihood, have a string which is eight bytes longer than the actual field of information you want to store. If you place more fields of information into a record, each preceded by a length variable (8 bytes), you would use valuable disk space just indicating how long each field is.

To indicate the length of a string using an ASCII value, all you need is the CHR$() function. Once you have determined the fields length, just print the field(s) to the disk record preceding each field by a CHR$(nnn), where 'nnn' is set equal to the length of the field it precedes. This way you only have one additional byte for each field in the record.

Let's backpedal for a moment. When I discuss records and fields, just think of a record as a sheet of paper which will go into a FILE in a cabinet. A field is one item on that record. The file cabinet is the disk you are using. The manila envelope the records are kept in is the FILE on the disk. The sheet of paper the record is on is the RECORD written to the disk file. The fields are the individual items which compose the record. I hope this helps. Just think of a file cabinet full of files and records.

To continue where we left off, to find and post the length of a field in a record, you might do this:

```
100 X=LEN(A$)
110 PRINT #1:CHR$(X);A$
```

or:

```
100 PRINT #1:CHR$(LEN(A$));A$
```

Either way is valid, although the second saves you a few steps and some memory. In case you didn't know, you can invoke functions in the middle of other functions, as long as they produce the results that the other function can use. When you do this, it makes it more difficult to troubleshoot when you have bugs, but it does improve the execution of the program and saves some memory. Assuming its done right, of course.

Before we go any further, I discovered I was not entirely correct in saying that a numeric value stored on disk requires eight bytes to store. This is true only if the file is opened in INTERNAL format. If the file is opened in DISPLAY format, then it occupies three or more bytes, depending on the number of digits in the number. If the number is one, then there would be a leading space which would indicate the sign of the number if it were anything other than positive, the digit, 1, itself, and a trailing space. If you are familiar with the way numbers are displayed on the screen, then you'll know that this is the same format. If the

number was 100, then it would occupy five bytes on the disk; a leading and trailing space, and three bytes for the digits 1,0, and 0.

So my way is still better. If the file were in internal format, then it also has extra bytes to indicate how long each item is. This is because data is not altered by print delimiters in INTERNAL format as they are when in DISPLAY format. Delimiters are ignored and each item is treated as an individual field.
To mix display formats to illustrate a point, I will show you what each file looks like on disk. Some entries are easier seen in ASCII form and some are easier seen in hex, so I will precede each Hex entry with a lowercase 'h'. All oher entries will be ASCII. I wrote a file which looped through ten times and placed the number of the loop and the word "STRING" on a record. After it finished the first ten loops it repeated, only this time, it used the CHR$() function to place an ASCII value corresponding to the loop number.

Display Format:

h09 -space- 1 -space- STRING h09 -space- 2 -space- STRING etc...

h07 h01 STRING h07 h02 STRING etc...

Internal Format:

h10 h08 h42 h01 h00 h00 h00 h00 h00 h00 h06 STIRNG h10 h08 h42 h02 h00 h00 h00 h00 h00 h00 h06 STRING

h09 h01 h01 h06 STIRNG h09 h01 h02 h06 STRING etc...

The second set in each group was the set that was ASCII encoded. The first set in each was how it would show if you did a PRINT #1:A;"STIRNG". The second if you did a PRINT #1:CHR$(A);"STRING". As you can see Display format is the choice to make and encoding the number into an ASCII character saves on top of that. Internal Format is used primarily if you are doing a lot of number crunching, because it doesn't require conversion into floating point. I can't really see any other advantage to it.

If you look again at the disk layout of each file type, you'll notice the following:

Display w/o encoding requires a minimum of ten bytes to describe our number and six byte string.

Display w/encoding requires 8 bytes to describe any number and our six byte string.

Internal w/o encoding requires 17 bytes to describe a number and six byte string.

Internal w/encoding requires 10 bytes to describe a number and six byte string.

One way to make Internal files more efficient would be to place all the fields in the record into one string before PRINTing it to the file. That way would require more programming to put it together and take it apart.

Enough with the file lesson. Let's get on with the task at hand. After

the records are produced, they will have to be "decoded" to print out the labels. This can be done using the SEG$() function and the ASC() function. The SEG$() function is used to extract characters and groups of characters from a larger character string. The ASC() function is the inverse of the CHR$() function in that it takes a character and yields its ASCII value instead of an ASCII value to a character. For example, PRINT CHR$(65) prints an uppercase "A" while PRINT ASC("A") prints a 65, which is the ASCII code of the letter "A". Since the ASC() function yields a number, it can be used without any further conversion. Let's see what a statement that decoded a record might look like:

```
1000 INPUT #1:R$
1010 LG=ASC(SEG$(R$,1,1))
1020 FIELD$=SEG$(R$,2,LG)
```

Hmmm. That doesn't look too difficult. The first line reads the entire record into R$. Remember, the record includes the coded ASCII characters that indicate the length of the fields. For this example, let's assume there is only one field in the record.

The next line uses the SEG$() function to extract the length character value from the string. Since there is only one field here, we know that the first character of the string is the length byte. All the "decoding" necessary is done with the ASC() function. Simple.

Once we have the ASCII code of the length byte we just use the Seg$() starting at the next character and going on the number of characters specified by the length byte. If there were more fields in this string, then the next statements would take it from that point and decode the rest of the string. This would require another variable or two to keep track of the current string position.

We'll cover this soon because it will be incorporated into the program that I'm about to present. The first thing to do is create a title screen and a way to proceed from it. I find that a time delay with a keyscan works nicely for me. The title is displayed until you press a key or an interval of time passes. Then control is passed to a menu screen. To set up a delay and scan just use a FOR NEXT loop with a CALL KEY in the middle of the loop. If a key is pressed, it jumps out of the loop. If not, it times out and jumps out anyway. For example:

```
20 DISPLAY AT(8,9)ERASE ALL:"LABELMAKER" :: FOR D=1 TO 1500 :: CALL KEY(0,K,S):: IF S=0 THEN 30 ELSE 40
30 NEXT D
```

I know, it's in Extended Basic. It was the choice I made at the time, but it could almost as easily have been written in Basic. The only real loss is the DISPLAY AT routines, which aren't really necessary. The rest of the logic works equally well in BASIC. It would just have to be split up into several simpler statements. Also, there are some IF-THEN-ELSE statements which would need to be reduced to line number references instead of conditional statements.

The first line DISPLAYs the title at row 8, column 9 and then sets up a FOR-NEXT loop to start the time delay. Each time the loop is executed, the CALL KEY statement scans the keyboard once to see if a key was pressed. If not, execution falls through to the next line which contains the NEXT for the FOR-NEXT loop and execution of the loop is repeated until

its maximum value is exceeded (if no key is pressed).

If a key is pressed, or the loop counts out, then execution continues at Line 40 which sets up the main menu selections. The first option is to create a list of names; your second is to print labels and your third is to exit the program. There could be more selections, but then it would complicate the program without really illustrating anything new. Also there is another PRINT statement at the end of the line which says "CHOICE: 1". Obviously I'm going to use this to prompt the user to make a selection, but what is the one doing there? If youv've ever seen some programs that present the user with a selection number that corresponds to the most popular choice for an application, then you will have an idea that this is the way to place your own default values by a selection prompt. As we go on you'll see how its done.

I just realized that I forgot to show you the line I was talking about:

```
40  DISPLAY  AT(12,4):"1) CREATE LIST":  :  :"  2) MAKE LABELS":  :
:"  3) EXIT": : :"  CHOICE: 1"
```

Hope that helps. The next thing to do is devise a way to select one of the options listed. For that we can use an ACCEPT AT statement. There are other things that could be used, but this is a good all around choice because it has extensive error trapping capabilities. If you have TI Basic, then you must use an INPUT and trap errors after an input is made. Another reason to use the ACCEPT AT is because this allows us to use the default prompt we displayed next to "CHOICE". If you specify a negative SIZE clause, then the screen area you set for ACCEPTing AT will not be cleared and it will ACCEPT anything that was there or placed there. Also, you can control what is entered by VALIDATING a string of characters or by using prespecified groups TI provides. In this case we want the string "123" because those are the choices to be made. Any other keypresses will result in a warning tone and will not be ACCEPTed.

```
50  ACCEPT  AT(21,12)SIZE(-1)VALIDATE("123")BEEP:X  ::ON  X  GOSUB
100,1000,1090
```

The statement after the ACCEPT AT is an ON GOSUB statement. This allows you to control the program flow without a series of checks on the value of the variable to see what it is. It assumes you have made all the error trapping and range checking on the variable before you get there and simply takes the X number branch in the list of line numbers. For example, in the above statement, if X=2 then the program would branch to the subroutine at line 1000. because it is the second in the list. If X=0 or X is greater than the number of lines in the list, then you get an error. ON GOTO works the same way as ON GOSUB except that it doesn't expect to RETURN to the statement after the ON GOSUB. Notice that I said the STATEMENT after and not the Line after. This is because Extended Basic is capable of multistatement lines. While TI Basic's next statement has to be on the next line, this is not true for XB, and any XB Gosub will return to the same line if there is a statement following the GOSUB on that line.

After this line then, we must provide a suitable environment for the program to return to after finishing with a subroutine. Due to the way the program is set up, all subroutines return to the same place. At this point, all we need is to clear the screen and redisplay the menu screen. This is accomplished as follows:


```
60 CALL CLEAR :: GOTO 40
```

Simple to do and also the end of the main body of the program. After this all there is are the subroutines that are called when the user makes a selection. Due to limitations on my time, I will have to present the rest of this in the next issue. I did want to share something else I just finally got straight in my head about using the ON ERROR statement in Extended Basic

When you type a line such as:

```
100 ON ERROR 1000
```

it sets a pointer in the computers memory that points to line 1000. If an error is generated it checks for this pointer and if it finds it, it branches to whatever line is pointed to, in this case line 1000. Once an error is generated and the branch is taken, the pointer is cleared. There is no longer ANY ON ERROR protection in your program. I think that a lot of people think that if they put an ON ERROR statement in their program that ANY error is covered. That is not so. After each error is generated, the ON ERROR pointer must be renewed.

When you branch to an error routine, it must be treated like a subroutine. It must end in some kind of RETURN statement. You are allowed three types of RETURNs.

RETURN returns you to the SAME statement that caused the error. This is useful if you correct the problem before you execute the statement before you return.
RETURN NEXT returns you to the statement following the one which caused the error. This is useful if you don't need to correct the error, but just want to continue on.
RETURN XXXX where XXXX is a line number. This allows you to control the flow of the program in the event of an error. Let's say if some one made an error and you want him to go to a menu and reselect some other option. You could use this to accomplish that.

When you are about to RETURN from an error handling routine, it is best to renew the pointer. It can be done like this:

```
1000 ON ERROR 1000 :: RETURN NEXT
```

If you renew the error pointer before you RETURN from an error handling routine, you can be assured that an error won't be allowed to crash your program.

TI Extended Basic probably has some of the best Error handling capabilities of all microcomputers. In addition to trapping errors before they can happen with the Validate clause of the ACCEPT AT statement, detecting and controlling errors with the ON ERROR statement, and controlling logic flow in the event of an error with the various RETURNs, you also have the CALL ERR() statement.

CALL ERR() allows you to identify the error, the line number on which it occurred, what kind of error it was and if it was caused from an I/O device, what file number it was that generated the error. Check out page 83 of your TI Extended Basic manual for more details on this statement.

I'd like to leave you with this short routine which creates many errors and traps them in such a way that it illustrates what I was just talking about:

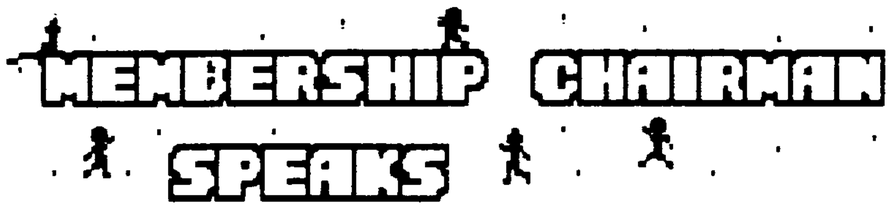
```
100 ON ERROR 200
110 PRINT 110 :: CALL HCHAR(-1,-4,976)
120 PRINT 120 :: CALL SOUND(500000,)
130 PRINT 130 :: CALL SCREEN(7,658)
140 PRINT 140 :: END
200 PRINT 200 :: ON ERROR 200 :: RETURN NEXT
```

This routine will print any line numbers it encounters. That way you can see how the errors are trapped. If you say, "Why not just TRACE the program?", you'l find that if you do, the error lines are not traced. I guess its not part of the regular programs housekeeping and the trace function apparently doesn't work there. Try it though and see for yourself.

I'll see you at the Sept. meeting and try to finish the label routine in the next issue. See you then!

CHICAGO AREA TI99/4A USERS GROUP
SUMMARY OF CASH TRANSACTIONS
JUNE 1-JUNE 30, 1987

	TOTAL	FAIRE	LIBRARY	MEMBER-SHIP	OTHER
RECEIPTS	1,657.44		331.50	351.00	974.94
DISBURSEMENTS:					
MAILING	423.64	13.99		47.64	362.01
PRINTING	650.60				650.60
DISK DRIVE	50.00				50.00
ADVERTISING	70.50			70.50	
SUPPLIES	142.95				142.95
SUNDRY	106.46			18.85	87.61
	1,444.15	13.99	0.00	136.99	1,293.17
DECREASE IN CASH	213.29	-13.99	331.50	214.01	-318.23



Don Jones

THE FAIRE IS IT!!!

Hi there, Sports Fans! If it isn't apparent to you why I named this month's article what I did, then allow me to explain: As most of you know, this year, I'm the chairman of our yearly Faire. Therefore, for me, it is the only ball game in town. As the chairman, I have been working on this project since June. As a result, I have been able to accomplish a great deal. The first thing which I did was to grovel and beg--I mean ask various people to take the chairmanships of various committees which I created. The second thing which I did was to start planning the various events which would be occurring within the Faire's timeframe. The third thing which I did was to send out the first, the biggest, and the most important mailing to the various vendors in the T.I. community. All this was accomplished in June. Since then I have been working on the details and attempting to tie the various aspects of the Faire together. It has been an awesome task. Sandy Bartels, how did you ever do this for two years in a row??? After seeing what Sandy had to do, I am thinking of changing her name to Diana Prince. Also, after this Faire, just call me Bruce--Bruce Wayne that is! (Can you imagine Bruce Wayne wearing a "rug?")

Well, the Faire is coming along nicely. Most of our available tables have been taken. Some of the exhibitors have purchased ad space in our Faire Booke and our regular newsletter. Various members have volunteered to work on the various committees. I now find myself getting to that place where I will be having little to do up to the actual time of the Faire. In other words, things are going along reasonably well. There have been set-backs, mind you, but I have survived in the past, and I will survive this event.

I really do expect this Faire to be different from those which have preceeded it. One of the biggest changes is the fact that we are having our hospitality suite, group accomodations, and our first "Friday Night Social" at the O'Hare/Kennedy Holiday Inn. This is strictly a class establishment; it includes a sauna, a steambath, an exercise room, a swimming pool, a whirlpool, a jacuzzi, indoor tanning equipment, a putting green, a game area for Ping-Pong, badminton, or volleyball, and a 12,000 square foot Holidome/Atrium. Add to this, restaurants, a French styled cafe, a bakery, clean rooms, and free transportation to O'Hare Field and you have a big winner! At the rate of $65.00 per single OR double occupancy, I expect for most of our out-of-town visitors to use this facility. I would also like to suggest that our in-town members make use of this facility for the weekend. You can make it into a special weekend away from home and the kids. At this special rate, it

would be a hard treat to beat. If anyone is interested in receiving a special reservation card or more information about this most impressive facility, just write to me at our post office box address, and I will send the information out to you, forthwith.

EXTRA VOLUNTEERS STILL NEEDED!!!

As the Faire moves along, there is still a need from you sports fans out there in T.I. land. Just remember, quite a few of the committees still need some warm bodies to make them work; therefore, please volunteer. At this time, the set-up committee and the break-down committees are the largest, and there is always a need for some strong backs to man these committees. Please join in the fun! "Froggy" Maksimik can use some help with the arcade games. On the Friday before the Faire, Marcy Brun can use some extra hands to help with the hospitality suite at the hotel on the Friday before the Faire. Later, that evening, Sandy Bartels can use some assistance with setting up our first ever "Friday Night Social Mixer." On the day of the Faire, Nancy Rauch can use an extra person or two to help with the membership table. Early that morning, John Behnke can use some help with the parking assignments and traffic control. Also, Jon Bartels and I can use some help on the doors of the Fireside Lounge. These are the main areas where help is presently needed, but if there is some other particular place where you would like to work, I just may be able to place you there. Incidentally, if you would prefer to do some clerical or secretarial work before or during the Faire, here, I can also easily accomodate you.

Just remember, the people who are doing the work of the Faire are just normal and ordinary members just like you. No one gets paid, but many benefit. Please volunteer and do your "Faire" (sic) share! Also, we have a few things planned to make it worth your while to volunteer. Firstly, if you volunteer and function on any Faire committee, you will receive a free admission to our "Friday Night Social Mixer." (Those who don't volunteer will be charged $4.50 at the door but $3.50 if they buy their tickets earlier.) Secondly, those individuals who volunteer will have the opportunity to purchase a ticket for our "Saturday Night Dinner," which will take place after the Faire. If you <u>still</u> don't want to volunteer yourself, just see "The Mighty Buzard" Krantz and volunteer your system so that you can receive a free membership renewal and your choice of a disk from our library. (We will indemnify all loaners against any losses or damages to any systems or equipment loaned.) As you can see, we have plenty of ways to make sure that everyone is a winner!

Speaking of volunteers, we have some new ones. As "The Great Stumper," Al Stump is unable to continue to act as the back issues chairman <u>and</u> the hardware chairman. I am confident that anyone who has kept up with Al's articles or approached him with a hardware problem will agree that we need him more for his knowledge of computer hardware rather than his ability to mail out back issues. We therefore now have a new back issues chairman, Harold Shanafield. His dad is Hal Shanafield, who makes up the cassette orders which our library receives. As you can see, we T.I. folks like to keep our computer activities "in the family," so to speak. Also, Tom Wandrey will be helping with the duplication of the tapes which go out to our non-attending members. Many thanks to the above mentioned new volunteers and to the many other volunteers and helpers who help to make our group as strong as it is.

HELP MAKE THE FAIRE A SUCCESS!!!

In order for our Faire to be the success which it always has been, we must have the cooperation and help of everyone possible. Please plan to come and attend as many of our events as possible. As I have mentioned before, our "Friday Night Social Mixer" will be the first one ever. Please plan to attend so that we can make our foreign visitors, our out-of-town attendees, and our vendors feel both welcome and at home. It will also be your chance to meet some of our out-of-town members, some of the programmers, designers, producers, and engineers who will be attending our show. This will be a low-key event as it will be an opportunity for our set-up crew to get a well deserved rest and an opportunity to relax. (Food and drink will be served, of course.) Still, I expect for a great deal of information to be passed around. There will also be systems running to facilitate the flow of information and the sharing of programs. This will be your best opportunity to ask questions of the "experts." As we will be talking "business," it will be very appropriate to discuss hardware and software concerns with the people who sell, service, and design the items which are presently attracting the attention of the T.I. community! Please come and participate. You wont be sorry that you did.

On Saturday night, after the Faire break-down, we will be having our "Saturday Night Dinner." This will be a catered affair held in the banquet rooms of Triton College. Though the Faire will subsidize part of the cost of the meal, the cost to all attendees will be $8.00 per person. This will be a very nice dinner consisting of the following: Sliced turkey and gravy, carved round of beef, rice pilaf, salad, rolls and butter, beverages, a desert, cole slaw, green peas with mushrooms, pickled beets, an assorted dessert table, and a cash bar. This dinner will be open only to our exhibitors, demonstrators, foreign members (from outside the continental United States), and volunteers, so if you want to attend, get your name on a committee so that you will be eligible to purchase a ticket. For those of you who are already on a volunteer list, you may start sending your checks to Paul Farber, at our post office box address, or you may see him during or after the next two regular group meetings. He must have your checks and orders by October 15, 1987.

A NEW MEMBERSHIP STATUS IS BORN!

At the suggestion of our beloved executive board, effective September 1, 1987 we will have a new membership status: The On-Going Non-Attending Membership. Presently, a new non-attending member receives a one-time premium; this premium is a membership packet which consists of the following: a.) a listing of the programs in our library, b.) a document on how to use our bulletin board, c.) a "flippy" disk or a 30 minute cassette tape containing samples of the programs in our library, and d.) a life-time password to our bulletin board. Our new On-Going Non-Attending Membership will be open to all members who renew their memberships between September 1, 1987 and December 31, 1987. The premium for this new membership category will be a copy of the new library catalogue for the year with a certificate for a disk of your choice. Library catalogues cost $1.50 when ordered by mail and $1.00 when purchased at the meeting; you know what the cost of a disk is. It is therefore clear that this is a bargain.

While we're on the subject of membership, it's time for me to remind you to renew your memberships. Membership renewal will begin on September 1,

1987. There is also a $3.00 discount for current members who renew their memberships before January 1, 1988. This means that anyone who renews his/her membership between September 1, 1987 and December 31, 1987 will pay only $15.00 for an attending membership renewal (regardless of how you may have initially signed up) or $18.00 for an On-Going Non-Attending Membership renewal. After January 1, 1988, the cost for an attending membership renewal will be $18.00; the cost for an On-Going Non-Attending Membership renewal will be $21.00. You can see that it pays to renew early! Also, in order to discourage late renewals, the executive board has voted to refrain from sending back issues to those members who renew their memberships after the month of January. In the case of new members, the back issues for the year will continue to be sent out between January 1 and August 31 of each year. Current members who are delinquent in their renewals will have to purchase any missing back issues, if they want them. This decision was made because of the great amount of extra work which delinquent renewals cause the back issues chairman. Please don't be tardy!

Well Sports Fans, I guess that that's about it for now. It's now time for old Krome Dome Jonz to mosey on out into the setting sun. In closing, I would like to say that everything that Al Stump said about the Horizon RAM disk is true. Thanks to Al's help and advice, I now have one up and running in my p-box. It is a great product that enhances the usefulness and ease of the T.I. Computer to such an extent that it must be taken seriously and considered as a "real computer." Now, we have the Geneve 9640 computer being shipped. Here again we have a potential source of added life for the T.I. community. If it is able to do all that it is supposed to, there are a lot of T.I. loyalists who will be having the last laugh. Please support the T.I. third party vendors as they are the people who support us. Also, SUPPORT YOUR FAIRE. Plan to attend the various activities and help make it a success. See you next month and SEE YOU AT THE FAIRE!!!

99/4a SUPPORT

Myarc's Geneve 9640 Computer	
with pc-type keyboard	$500 00
with enhanced keyboard	$530 00
JOY PAINT '99 with clip art disk #1	$39 95
JOY PAINT'S PAL	$9 95
CLIP ART DISK #2	$9 95
EXTENDED BUSINESS GRAPHS II	$24 95
BANNER '99	$19 95

For the GENEVE please add 2% shipping
Order information 517 546 0566
Please write for a free catalog!

Great Lakes Software, Inc.
804 E Grand River Ave
Howell, MI 48843

PROCESSED DATA

BY Sandy Bartels

This summer has been whizzing by, and I can't believe that there is so little time left before we once again start up our meetings this fall. I thought that I would give you a quick run down on what's been happening since our last meeting.

The computer show that the club attended in June at the DuPage Fairgrounds was a great success, not so much as far as money goes, but as far as meeting people we did great. I will be sending out meeting invitations to about 25 people that have TI's, but never knew our group was around. We also met many people that took information for friends that have TI's. I would like to thank all the members that worked at the computer show. They drove many miles and gave up their Saturday and Sunday for the benefit of the club. Thank you Al, Don, Bernie, Grant, Sherry, Chuck, Bob, Ken, and my husband Jon. We all worked at the show but we also had a lot of fun too. We will be going to many more of these shows in the coming year, because we have found that it is one of the best ways to advertise our club. People are starting to look for us already. If you are looking to help out the club in some small way, and want to have some fun come sign up for the next computer show.

We have the opportunity to attend two more shows this fall. One show is at the end of September, and we have been asked to speak at a show in the beginning of October. Don Jones and I will be making presentations at the show in October, and will have more information on the show later.

Len Rover has been working on our not-for-profit status with the IRS, through a colleague in his office. Len reports things seem to be going smoothly. The Faire is coming together rather early this year. I hear that we have over half the booths rented already. It looks like this Faire will be bigger then last year's. I will be selling tickets for the Friday night social mixer at the meeting in September. I really hope that all our attending members will be there to take advantage of meeting nationally reknowned hardware and software producers in a cozy atmosphere. This is your chance to bring along your spouse, and introduce them to some of the people you talk about, but they never get to see. You will also get to meet some of our out of town TI friends. Don Jones has some interesting things planned for that night. The tickets will be $3.50 before the mixer and $4.50 at the door on the night of the mixer. There will be an open cash bar and free snacks that night. If any members want to stay near the action during the weekend of the Faire like my husband and I do, and don't want to do a lot of driving, the club has a block of rooms set aside at the Holiday O'Hare Inn. See Al Stump for information about making reservations. This is the biggest event of our Chicago TI year. Come and really enjoy the fun.

I hope you all had a great summer and are looking forward to the fall as much as I am. See you on Sept. 12th at Triton College.

PROGRESS REPORT FOR THE 1987 TI-FAIRE by marcy brun

I'm sure you have been frantically waiting all summer to hear how the TI-Faire has progressed. Well, have I got the news for you. The following is a list of exhibitors and their products signed up as of today (July 28th):

Chicago 8128 Users' Group	disks and storage boxes, etc.
Ryte Data	hardware and software
B & D Computer Supplies	computer supplies
C and G Drives	disk drives and power supplies
Channel 99 Users' Group	magazines and software
Competition Computer Products	TI products
Compuserve/TI-Forum	communications/information services
Data Systems	software
Disk Movers	diskettes and storage cases
Great Lakes Software	Joy Paint 99 and 2 new programs to be released
Horizon Computer Limited	Horizon Ramdisk
Hunter Electronics	hardware and software
L.L. Conner Enterprise	TI and 3rd party hardware and software
Myarc, Inc.	Geneve 9640
Rave 99 Co.	Rave 99 keyboard products
Tomputer Software	software
Service Solutions, Inc.	service
Will County Users' Group	software
Corporate Disk Company	computer disks

The floor is filling quickly. If you know of any vendor who would like to be in the Faire, tell them to call now while there are still some good spaces.

We will have a table at the Faire devoted to work done by our group members. If you have software or programs that YOU have created and would like to sell them at the Faire, this is for you. All you have to do is work the table for at least one hour and donate to the Group 20% of your sales. If you are interested, please leave a message for Don Jones on the Bulletin Board.

Mike (Frogman) Maksimik is choosing some good games for the Arcade Contest. Prizes will be awarded to the top scorers (which need not be present for the judging). So start brushing up on your game skills.

Everyone that enters the Faire will be given a ticket for the door prize drawings. We will be asking the exhibitors for donations for the prizes. Therefore, we should have at least one drawing every hour. The prizes will be announced at a later date.

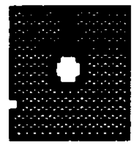
The seminar schedual is starting to develop. Lou Phillips of Myarc, Inc. will be demonstrating the Geneve 9640. Our own Dave Wakely has arranged to demonstrate the TurboXT Personal Computer System for Triton. I'll let you know about the other seminars in my next report.

Besides being a speaker at the Faire, I hear Lou Phillips will also be coming to the Friday Night Social Mixer at the Holiday Inn. The Price of the tickets for this event will be $3.50 in advance and $4.50 at the door. Please plan on coming to get to know your fellow TI members and vendors. (I'll certainly be there with my dancing shoes on If anyone is interested.)

After enjoying the evening at the Friday Night Mixer, plan on relaxing in a room at the O'Hare/Kennedy Holiday Inn. We have arranged to block rooms at a discounted price of $65.00 for a single or double room. Contact Al Stump on the bulletin Board for a reservation form. For those of who are Exhibitors, Executive Board, or Faire workers, the price of the Saturday Night Dinner will be $8.00. I hear that Paul Farber is planning a very good menu for this event. If you are interested, volunteer to work the Faire.

Besides the theme of "The Computer That Refusses to Die", we have incorporated the theme "T.I. Hands Around The World". We are sending a special invitation to all our members out of the United States to attend the Faire and it's events.

Things are really shaping up. The 1987 TI-Faire looks like it will be great and enjoyed by all. Remember this is your Faire and your Users' Group. So remember to support your TI vendors or they won't be there to support you.



SOFTWARE REVIEW

Jack Top̈han

I finally got my hands on SPAD, the new flight simulator from NOT POLYOPTICS. About $25 from HUNTER and well worth the price. Thanks to John Behnke's demo at the last meeting, most of you have an idea of what it is all about. The manual is very helpful with historical and flight characteristic data on the SPAD.
Several scenarios are included which include bombing and observation flights and a grand flight adventure. It took me a couple of hours at the joystick and/or keyboard before I got the hang of it. Stalls are my problem since I want to hot rod and forget about my airspeed. The Cockpit panel shows ALTITUDE, DIRECTION, AIR SPEED, and FUEL. Additional controls are RUDDER, THROTTLE, and the STICK. You can turn your head for any view with a key press. SPAD is well done and puts the 99 to work very effectively.

After some difficulty I finally received a copy of RON ALBRIGHT's "THE ORPHAN'S SURVIVAL HANDBOOK". Ron is the author of the best seller "ORPHAN CHRONICALS" which I still highly recommend. I am guilty of having made my mind up as to what this handbook ought to be since I am tasked with reading 200+ newsletters each month and kinda know what is out there. I have also subscribed to all the 99 rags since day one and have built up a lot of 99 material. While its value to me is minimal, it could be just what you are looking for. 200+ pages ready for a three ring binder. $17.95 from DISK ONLY SOFTWARE, PO Box 244, Lorton, VA

22079. Updates will be available at $8.95 each. The handbook is a compendium of TI 99 material gleaned from various sources, reproduced as it appeared.

SIDEWAYS printing of TI WRITER files and 2 to 4 Col printing is available on disk from the LA 99er Computer group for $9. These are the Tom Freeman files that do the job. Disk also comes with some other goodies as well. A steal! PO Box 3547, Gardena, CA 90247-7247.

I goofed on prices for TIGERCUB software. Jim has reduced prices which make his disks an even better value.
I just received NUTS and BOLTS #3, and it is as great as were #1 and 2. Now $15 each post paid. The 3 disks will give you 348 CALLs for use in XBASIC. He has reduced the 4 TIPs Disks and the 18 TIGERCUB Collection disks to $10 each. This is but a taste of what Jim offers. Sent him a buck for his catalog, you will not be sorry.
156 Collingwood Ave. Columbus, Ohio 43213.

GENIAL TRAVelER #6 arrived along with Disk #1 from his son, John Calvin. $18 will get you 6 flippies and already one bonus coming up. Barry is helping his son become a 99 businessman, and I for one gave it a shot. So far so good. #1 is 758 sectors of a SCREEN DUMP, set of SORT routines, a great demo of Enhanced Display Package, all with full DOCS, etc. Like father, like son.
John Calvin Traver, 835 Green Valley Dr. Philadelphia, PA 19128.

Jim Swedlow sent me the latest update to SIDE*PRINT which remains the one best program for sideways printing MULTIPLAN files. Version 3.3 now offers the choice of 80 or 132 ROWS per page for an EPSON compatable printer. Other printers will differ but 11 types are supported! Update $5 or send a disk and $3. First time same thing, but send a $10 freeware payment if you use it!
I also ordered XB*TOOLS from Jim as well and was not disappointed . Six different programs that take an XB program saved in MERGE format and either extract information or modify it. NAMECHANGE will change the names of up to 10 variables in one pass. COMPRESS will eliminate memory wasting lines, etc. DATAPRESS combines DATA lines to max extent. And so on it goes. Freeware, so send $ per above or request both at once.
7301 Kirkby Way, Stanton, CA 90680.

USER Disk #4 for GSCD is available from HUNTER. Many new FONTS, and GRAPHICS. 103 files make a nice addition to the ever growing library. What more can I say?

From the NORTHERN NEW JERSEY UG comes a disk called DISK PRINTER. It's in the library as freeware so pay up if you use it!
DP Prints the outline of a Disk Envelope and lists the Disk contents on the outside. Print it, then cut it out and paste it together, and you have a neat Disk envelope, customized with your name and the date. Docs are on the disk if you need them. The neat thing is that you can add comments to each file name. Yes.. you can print without making an envelope if all you want is a listing.

For you II adventurers the sequel to OLD DARK CAVES has been released tru ASGARD SOFTWARE. Up to 4 players, 170K byte, and fast running "LEGENDS" has a character generator for designing your own players. With 44 distinct game screens, 50 monsters, and 6 dungeons, LEGENDS promises to be worth the year it took to develope. Assy language acceses 60k of

graphics data for some very impressive screen images. Full system and XB required. TENEX or ASGARD direct. Try HUNTER first of course.

McCANN SOFTWARE has produced TPA TOOLBOX which includes a PAGE MANAGER, SIGN TOOL, FONT CONVERSION, BORDER BUILDER, FORMS TOOL, and FONTS BORDERS. TPA TOOLBOX adds five new dimensions to the already terrific THE PRINTERS APPRENTICE. Each of the TOOLs works on its own and are compatible with TPA. McCANN continues to suppoert te 99-4A with super TOOLS for the art of pagemanship. TOOLBOX $22.50, TPA $22.50, and FONTS DISK #1 $11.50.
P.O. BOX 34160, OHMAHA, NE 68134.

I received COMMAND DOS from Ryte Data which has been written by Monty Schmidt. Monty wrote it in program image for a Super Cart loader so so far I haven't been able to try it with my Gram Kracker. A GK loader is in the works, so.....
C DOS is a unique utility which extends the TI Operating System (OS). If enough interest is generated it will be made available as a Cartridge. When loaded 4A DOS appears on the screen as a menu selection. When selected, the default drive is searched for a file called AUTO-BAT which is then executed as a batch file. (IBMers sound familiar?) To wet your appetite I'll list the various commands in the first version. BATCH, BEEP, CLS, COPY, DEL, DIR (vol name), , DISKNAME, ECHO (on/off), ERASE, FIX80, HELP, HONK, INIT, LINK (start name), LOAD, MORE, ONKEY, OUTPUT (on/off), P? (device name) , PRINT, PROTECT, REF (list REF/DEF table), REM, RENAME, SETPRINT, STAus(registers), TYPE, UNPROTECT, VERsion, VOLume name, WAIT, WIDTH (40/80), and X (filename).
I'll have more to share once my loader arrives. Looks very interesting.....

My last review is PERSONAL AUDITOR from Bill Gaskill. PA is one of the most professional programs that I have come across for the 99/4A. I have put the program disk in the FREEWARE library and if you want the 80 page handbook, you will have to send $15 to Bill. The quality of the manual matches the programming. FIRST CLASS! PA is a Financial Application for the TI 99/4A Home Computer without equal.
A full system is required but two drives make life a bit easier. The manual is organized by program function which I find neat. Those who purchase the manual will receive unlimited support and all updates. On first use after XB autoload, you set system defaults for printer type, no. of drives, screen color, etc. These can be saved along with data on the data disk.
The next task is to edit The Chart of Acounts for the 60 descriptors you want. Several suggested lists are provided. Once this file is saved on the data disk you are ready to take off. PA consists of a "system" of programs designed to provide personal financial management capability to the user. PA provides tools to collect and then capture data on cash, checking, and credit card information using 'ledgers'. General ledger files can be used to collect all three types of data. Checking and Creditcard ledgers are designed for specific data related only to the type of data that their name refers to.
Data can be sorted into sub files as required by each program. The program can be used for simple checking account tracking or it can go all the way to investment and income tax tracking. It's only up to you. It would take pages to fully describe this fantastic program. One of the programs I particularily like computes your Networth. Great if retirement is getting near. Lots of general financial incite is included as well. The $15 asked for for the manual makes this one of the top

values of 1987. Another place and another computer, you would be shelling out 5 to 10 times that much.
BOX 2642, Grand Junction, CO 81502

The Evolution of a Failure
The story of IBM

By Chris Bobbitt

The story of IBM's efforts in the microcomputer industry is a story of a company's inability to adapt to a marketplace. In short, IBM has ultimately been a failure in imposing it's will on the computer industry. This story is a parable of the dangers of corporate gigantism, and an illustration, yet again, of how a properly motivated David can knock off a Goliath any time and anywhere.

In 1982 IBM placed it's seal of approval on the microcomputer industry with the introduction of the IBM PC. Micros had been in constant use, particularly in small businesses and by professionals and farmers since the introduction of CP/M in 1977 by DRI. The early microcomputers, by the standards of today (which have in no part been set by IBM, but I'm getting ahead of myself now), were clunky and slow. They used little graphics or sound (this was reserved for "home" computers like the Apple II, Atari 400, Commodore 64 and TI-99/4), but were very functional. Visicalc, the forerunner of all spreadsheets (now considered an indispensable tool by all businesses), was invented and propagated on such machines. Word processors, databases, and telecommunications flourished years before IBM ever sold a single computer for less then $25,000. Until 1979, basically, the computer industry was IBM and everyone else. By 1982, it was IBM, everyone else, and Apple, Atari, Commodore, Texas Instruments, Radio Shack, etc.

It was at this point that IBM decided to make their own entry into the micro world. Like a dinosaur sensing it's own extinction unless moved to action, IBM set up an "entreprenurial corporate unit", basically a company within a company, to design and build a computer aimed at small businesses and individuals. This machine, by corporate dictum, was to "break no new ground". The designers succeeded with flying colors, later to the ultimate dismay of the very corporation that sponsered it. They basically designed a machine that was obsolete 3 years before it was introduced. Most aspects of the machine were basically a retrogression to an earlier era. IBM used strictly off-the-shelf components that they could purchase cheaply (the better the profit margin, my friend), and an obsolete design based on a horrible misfit of a chip manufactured by Intel, a then half-bankrupt microprocessor house. The only saving grace of the chip was that it had "16-bits". This made the IBM PC, as it was dubbed, the second widely available 16-bit machine, the other was based on a strange chip called the 9900, by TI, which was so off the wall and unique in it's design approach that normally conservative computer system designers couldn't make heads or tails of it, even though it was the most innovative chip ever released at that time. It was a chip only a hard-boiled techie could love, and has since been relagated to same. The 9900 later became a commercial failure, due to TI's inability to sell to anyone but the government, but that's a different story.

When it came time to find an operating system for this machine, IBM went to a small company called Microsoft, whose major claim to fame at the time was it's Microsoft BASIC - the standard for BASIC languages now and then. Microsoft was told to get an operating system fast, but not to tell anyone who it was for. Bill Gates, president of Microsoft, approached DRI (then second largest software company in the world after Visicorp - maker of Visicalc), and asked them to do a custom oprating system for an unspecified manufacturer within 3 months. Dr. Kildall of DRI basically told him to take a number since he was busy porting CP/M to 20 or so machines at the time. Gates' response was to dust off a CP/M clone that had been lying on a back shelf since 1978, purchased for $4000 from 2 brothers in Oregon, rename it MS-DOS, and offered it to IBM. IBM's response was "we don't care what it is as long as it works". Thus was born MS-DOS, and the source of Microsoft's fortune since.

The IBM PC was released in the early part of 1982 to generally bad reviews. Most of the computer magazines of the time were run by people who had a good knowledge of computers, and they recognized the PC as what it was - a real piece of garbage (or at least nothing compared to your average S-100 system) . Despite the efforts of a number of anti-establishment heroes of the early computer revolution, this was to become the standard, at least until recently.

While the computer press wrote the machine off, the big business press went wild over it. Companies who had never dreamed previously of purchasing a computer for less then $300,000 were now given the green light to buy a machine for, gosh, individual users, for about $3,000. A popular phrase of the time, "No one was ever fired for buying IBM", took on new significance as suddenly the Fortune 500 set woke up and realized that micros could do things, useful, productive things. A small company, called Lotus Development Corp., sensed an opportunity and introduced a Visicalc knock-off called "Lotus 1-2-3" for the PC, and the machine took off. Soon, every big accounting company in New York had hundreds of the things, and were wildly recommending their usefulness to their big clients. Within 2 years, all the early critics of the machine were either out of business, or sold out to the new faith. A standard was born.

The seeds of the PC's rise were later it's doom. While the PC itself was a machine of marginal, even poor capability, it had what is known as an "open architecture". Since all the components for the machine were easy to find as well as technical information for it, by 1984 there were hundreds of devices on the market to correct the many shortcomings of the machine. With an infusion of cash, the failing Intel took off and produced the 8086 (thus was born the IBM PC XT) and then the 80286 (introducing the IBM PC AT). While the later chips corrected the many problems with the 8088 (which reportedly was so ill-designed that it had bugs in the built-in controlling software that sometimes made a program never run the same each time), they basically expanded upon a design ideology that was reaching it's physical limit of expansion.

Another difficulty was rising in the east; the far east actually. Because the components of the IBM PC were basically low-technology items in the scale of things, the "clone" was born. This is a machine that is basically a copy of the IBM PC. Because many of the makers of the clones included things as standard that were optional fixes for the problems with the PC series (such as faster memory and processors) it soon became apparant that the IBM PC family was technically inferior to it's imitators (not too difficult a thing to be actually). Because compenents were standardized so

much and the construction process downright simple, the only real basis of comparison between machines became price, not quality, features, or technology. As a result, within a 2 year period most computer component production in the United States fled overseas where it was cheaper to build the machines. the IBM standard had a stranglehold on 70% of the market, and the only way to compete for this 70% was if you were cheaper then the other guy. Hence was born the "competitiveness" issue so popular recently in political circles - IBM basically stabbed the American high-tech industry in the back. Production shifted almost completely overseas in response to a more pirce sensitive situation (early computers were almost always completely constructed in the U.S. - as a matter of fact the last micro to be wholely made over here was the TI-99/4A in Lubbock). Between the years of 1982 and 1985, more then 50,000 jobs in the high-tech industry fled overseas because of the IBM standard.

So, a number of simultaneous events were happening. The IBM standard was approaching the limits of it's inherent expandability, production was rapidly shifting off-shore as the basis of competition became price, and the number of clone manufacturers jumped from 10 to 500. At the same time, IBM's market share dropped from 50% of the micro market to 25%, and their profit margin fell in half due to competition. If this wasn't bad enough, the Fortune 500 crowd soon became familiar enough with micros so that they were now unafraid to buy clones that were technically superior - so much so that the catchphrase today is "You may be fired for buying IBM!". Even the U.S. government was purchasing Zeniths, Compaq, and HP clones! The last nail in the coffin was struck by a small competitor of IBM, Apple.

In 1982 Apple had 40% of the computer market. By 1984 it had dropped to 12%. However, through this period Apple's profitability trebled, and it introduced a machine that was so obviously technologically superior that it has become a legend, the Macintosh. While never the success of the PC in big business. The Mac founded an industry, electronic publishing (the art of using a computer to combine words and text on a page in typeset quality), and a niche in art departments, newspapers, and small businesses all over the country. While software development for the Mac never began to approach that of the IBM world, what has been produced is so obviously of high quality that John Dvorak of the industry newspaper, Infoworld, which is dominated by IBM standard, was so moved to declare that "all innovative software being produced today is on the Mac.". The Mac, while never a big success, has a profitable nuche market that is expanding to other areas as users in big business have begun to realize it's utility elsewhere, showed the possibilities of graphics, sound, and ease of use. This was the straw that broke the camel's back so to speak. The basic IBM PC lacks all those things.

By 1986 it was obvious that the IBM standard was going to fade into oblivion, and IBM with it if IBM's profits were any indicator. As a matter of fact, in late 1986 IBM posted it's first loss ever, including during the Great Depression. All due to the failure of it's micro standard. "SOMETHING HAD TO BE DONE!" was heard throughout the hallowed halls of the corporate bureaucracy. IBM had stepped on it's cape. It had discovered that even the largest computer company in the world cannot ignore a basically technology driven market forever. The reaction was the birth of the rumors of a "clone killer".

These rumors materialized a few weeks ago with the introduction of the PS/2 series of computers. Within the next 18 months, it will become laughably obvious how much of a failure IBM is. If the PC was IBM

stumbling, the PS/2 is an outright fall. The PS/2 is IBM's attempt to imitate the Mac.

The net effect of the PS/2 series is to raise the costs of producing a clone of it dramatically. Since it uses proprietary technology called "gate arrays" (which cost anywhere between $20-100,000 each to produce), it effectively raises the cost of producing a clone out of the reach of 99% of clone manufacturers. However, the PS/2 is never going to have to worry much about clones. In fact, it is a failure on arrival.

IBM will sell thousands of them to large corporations, but for the forseeable future no company is ever again going to dominate the microcomputer market so. As the PC standard gets older and it's limitations get more obvious, the number of companies producing computers will dramatically rise, while clone makers will drop like flies. By the fact that IBM has used so much proprietary technology, the new companies by neccessity will produce non-IBM machines. For the first time since 1981, computer companies will be owned by engineers again, and will look to the future, and not the past. The types of computers available will increase dramatically. There will again be several different popular chips available on the market supporting hundreds of operating systems.

One thing is for sure, though, many of the machines will run PC software, even though they may not resemble a PC in the least on the inside or out. All will run clones of PC software. The number of niche markets will rise dramatically as again computers will be marketed specifically to particular market segments. The total effect of all this is the verticalization of the marketplace. The world, as we know it, will never be the same.

Oh yes, the PC has a future, but the same future afforded other abandoned computers - ignominity and the eventual death of major support. If you buy a PC now, you are either crazy, or you really don't care about support. If the latter is the case, then you can be proud to be known as an "orphan". The joke is definately on you if you bought a PC to escape that possibility!

Copyright 1987 - Chris Bobbitt
ALL RIGHTS RESERVED

May be reproduced if unaltered

A DESCRIPTION OF THE GENEVE COMPUTER
WITH RELEVANT COMMENTARY REGARDING WHAT IT MEANS TO US ALL

Copyright 1986 - Chris Bobbitt

At it's introduction, the Myarc Geneve computer will be among the most advanced computers available, and definitely the most advanced "home computer" in history. It is more powerful than many minicomputers, and is available at a price that would have been unheard of 3 years ago.

The following is a description of some of the capabilities of this remarkable device.

MICROPROCESSOR:

The TMS9995 CPU is 5 to 6 times faster than a TMS9900, the processor found in the TI99/4A. This processor is only slightly slower than the 68000 CPU, yet is much simpler to use, more accurate mathematically, and contains a smaller instruction set. The advantages of this smaller instruction set is an article in itself. Suffice it to say that this technique is getting a lot of attention in programming circles.

MEMORY:

The standard Geneve Computer comes with 640K of RAM. This is expandable to 2 Megabytes using special memory expansion devices. A Myarc 512K card can be made to work with the Geneve with simple modifications. The Myarc 512K card memory may be directly accessed by programs.

GRAPHICS

The Geneve uses the Yamaha 9938 graphics processor. The 9938 processor was designed by Texas Instruments and Microsoft Incorporated. The computer world will discover this chip and its capabilities much in the same way that they proudly announced 16 bit computing for microcomputers, years after TI had introduced the TI99/4A. This graphics processor supports a variety of different modes for graphics and text.

TEXT

The Geneve supports both 40 AND 80 column modes. The 40 column mode is similar to that of the 99/4A, so none of your current word processing software is obsolete. However, text, foreground and background colors may be any of 512 colors. 256 patterns are available for redefinition. One of the 80 column modes is the same, while another supports blinking text and multi-color text. Some limitations apply, but this permits programmers of the system to use many of the advanced human factors graphics techniques just now being developed. The use of color to impart information, much in the nature of peripheral vision can make word processing tasks was well as the initial learning process easier. Your Geneve computer will be able to keep up with this emerging technology for some time. Indeed the rich resources of the TI programming community may well result in some breakthroughs in graphics presentation. It is reasonably well known that some organizations in the community are working hard in this area. Since each of these various screens occupies very

little memory of the 128K of standard Video RAM on the Geneve, up to 32 screens of text can be stored in memory at once. All of this information is directly addressable by the programmer. This bodes well to provide a rich environment for the system and applications programmer and thus the user.

GRAPHICS

The Geneve supports every text mode of the 99/4A, as well as many new graphic modes that use much of the available memory. One of the more interesting modes supports a resolution of 256 by 212 pixels. Each pixel can be any of 256 colors. This mode also supports multi-color sprites. Each pixel row of the sprite can be any of two colors. Another interesting graphics mode supports 512 by 424 pixels with each pixel any of 16 colors. The on- screen display of a maximum of 16 different colors can be selected from a pallet of 512 colors. This mode is the same resolution as the Apple MacIntosh computer, yet the system still finds the capabilty to support sprites, which the MacIntosh does not. The 9938 chip has built in commands for line drawing, block moves and copies at hardware speeds. The benchmark for graphics systems, the Commodore Amiga, can only draw lines half as fast as the 9938 and rectangles nearly so. This bodes well for designers of presentation graphics and animation systems for everything from simple business presentations to television commercials!

INTERFACES

The Geneve has a number of ports. For video, there is a port for an analog RGB monitor. The analog RGB monitor is more advanced than the digital ones used by the TI Professional Computer in that it allows virtually an infinite range of colors on the screen. Texas Instruments used the quality of the TI PRO monitor as a major component in its "Dare to Compare" campaign against the inferior IBM PC display system. An Amiga monitor displays the power of the Geneve quite well, and is readily available. However, an additional port permits the use of your existing TI99/4A video monitor. Therefore, your current equipment is not obsoleted by the new machine, allowing you the luxury of leisurely getting the best price for your existing monitor and cutting the best possible deal for your upgrade. Indeed, some are already at work seeking to separate early dropouts in the Amiga world from their monitors. The Geneve also supports the Amiga mouse. Other monitors of the serial RGB type work, however, so do not pay extra simply because the name on the front.

Your 99/4A console can be used as a stand alone device with the purchase of the Geneve. The Geneve comes equipped with an IBM style keyboard. Other keyboards, costing from $50 to $500 will also work just fine. Since the Geneve replicates the functions of the console, you will only need the expansion system or one of the inexpensive expansion kits.

A multi-function port permits even more access to the Geneve. While labeled as being for the Amiga mouse mentioned earlier, it also can support sophisticated applications inputed from both exotic and common equipment. A video digitizer, for instance. Pictures taken from a video camera can be fed into the system. A digitizing tablet, which turns the Geneve into an elaborate data collection system or a component of a computer aided design/manufacturing/engineering (CAD/CAM/CAE) sytem is fully supportable, given proper software. Light pens are of course appropriate input devices as is information from a video cassette recorder

or a video camera. Indeed, with external converter devices available on the market, you can pipe in television signals and enjoy crisp resolution and vibrant colors never seen before from a commercial television set, thus putting your RGB monitor on overtime.

DISK DRIVES

The Geneve, when utilizing a Myarc Disk Controller, will be capable of transfering up to 1.2Mbits/sec from disk to memory - or roughly twice as fast as any computer for less then $10,000. When used in conjunction with the Myarc Hard Disk controller, this speed goes up to 5Mbits/sec (5 MILLION baud!), which is fast enough to do full-screen real-time animation with 10 screens displayed per second (as opposed to the average movie which displays 8 pictures per second to achieve apparant motion). Again, this capability is far beyond what comparably, and much higher priced machines are capable of doing. This is accomplished by utilizing an area of RAM in the computer (called 0 wait state Static RAM of which 8K is available in a standard Geneve) as temporary storage, along with the very modern WD1772 disk controller microprocessor.

HARDWARE COMPARISONS

To put this in perspective, compare the Geneve to other computers. The Geneve comes with 640K of RAM, equivalent to a fully configured IBM PC XT. This memory is expandable to 2 megabytes, twice the standard memory of an Atari 1040 ST. The Atari ST, of course, is one of the more popular "non IBM machines" on the market. The Atari ST is the fastest microcomputer available in its price range. The Geneve is roughly equivalent. The makers of the Geneve have gone to the extra expense of installing special purpose chips to handle, among other things, input from disks, lightpens, and other devices. In a similar vein, these special purpose chips handle output to screen, disk and elsewhere. And what about graphics? Again expensive special purpose redundance pays off. Therefore, in graphics, input and output, the Geneve runs circles around the Atari ST. The Geveve deploys eight times as many colors as the Commodore Amiga. The Amiga is the superior machine in these respects. The Geneve, unlike the Amiga and the IBM PC AT, supports graphics with a 'true aspect' ratio. This is the superior form, and gives higher resolution through the use of square pixels, the tiny dots used to give your computer screen, even your television its color and appearance of depth.

The Geneve rates highly as a smoothly upgradeable machine. It obviously will be compatable with the newly developed Myarc disk controller card. In disk drives supported, the Geneve with the Myarc disk controller card will defeat the IBM PC AT. Four 20 megabyte hard disks can be supported with this upgraded configuration, not to mention that the same scheme will control four (or less) double sided QUAD density floppie drives of the conventional 5 1/4 inch size. The drives that use the new plastic bound three inch disks are supported as well. Knowing the market, the Geneve makers realised they needed a system that would obsolete gracefully, as has the 99/4A.

Features of the 99/4A which still challenge the marketplace are retained. An example is the 99/4A's well known device independant operating system. Virtually any peripheral can be attached, unlike almost all other computers including those costing thousands. Device independence is a feature you (the 99/4A owner) have purchased years ago and one that should not be discarded in the name of progress. Therefore,

the Geneve is superior to most every micropcomputer in graphics, speed, memory capacity, and in versatility.

A full blown Geneve system would contain a Geneve computer, a WDS model hard and floppy disk controller, a TI RS232 card, plus a 3 slot expansion kit, linked to two full blown 720 kilobyte floppy disk drives and a high resolution serial RGB monitor. If bought all at the same time, using all new components, your system would cost less than $1,000. One of the finest features of such a system is that it can and probably should be acquired incrementally, particularly if you currently own an expanded 99/4A system. For a machine of this class, this is an incredible price. The Atari 1040 ST is well known as the first computer that cost less than One dollar for each one thousand bytes of memory, new. The Geneve may be the first machine to drive that cost down to fifty cents per thousand.

SOFTWARE

The Geneve will come bundled with a new version of Extended BASIC on disk which is fully 6 times faster than TI Extended BASIC. Also included will be a MS-DOS like operating system. The package is called "DOS like" because the commands used will be very close to MS-DOS. However, the internal workings of the system will not resemble nor be compatable with MS-DOS. This will be a boon for those who have had to struggle through learning MS-DOS at work or on another machine. In the package also will be an 80 column version of TI-Writer with a larger memory.

A number of other products specifically designed for the Geneve will be available at or near the release of the Geneve. A number of 'C' compilers will be available by all expectations. C is a very popular language on 32 bit machines and is now beginning to appear in micro computers in the last few years. Some business software will be readily available. UCSD Pascal, actually a language within its own operating system, will also be standard. Software developed on many machines, including the IBM PC, Apple, and others which use this system will run without modification on the Geneve.

The new Geneve software will allow users to set up directories as an aid to manage multiple files. A software RAMdisk will also be available, where the user can deal with a notional or in-software emulation of a disk. All interaction on this RAMdisk will be in memory, thus will operate at extremely high speed. Print spoolers will be available. People still pay $200 for print spoolers, which merely are hardware systems, now software, that fool both the computer and the printer. The printer is wired to signal the computer to stop sending data while the printer repositions the print head, or rolls up the platen. Meanwhile the computer is burning up thousands of cycles waiting for printer to get ready to receive data again. A spooler is nothing but an ever ready printer to the computer and a patient computer to the printer. The job is transmitted to the spooler in a second or two and you are ready to go again while the printer chunks away.

TI BUSINESS MACHINES-The Geneve is assembly language compatable to the TI mini computer world, and awaits a member of that community to make that software run.

There is one silver lining in the "Perils of Pauline" development path of the Geneve, so fraught with delays. Time to think about the new arrival has been purchased with the sweat of the developer in a process

which would normally have been extremely secret and quickly sprung on the unsuspecting community with little warning.

NEW OFFERINGS

One new company has been started specificly to develop Geneve software. A true multi-tasking operating system is among the goals of this firm. Multi-tasking to a user means that several programs can be run at the same time. Multitasking is at the heart of such programs such as Sidekick for the IBM where various panels, or windows are pulled down to allow notes and other activities to take place.

Yet another goal for this new developer is a macro-assembler. Macro-assemblers are small utility programs that can be strung together to achieve a variety of goals. In the mini computer world, programmers adroit in the macros of their particular machine rarely had to write much original code to achieve powerful results. This capability will soon arrive for you with the Geneve.

Soon after shipments of the Geneve begin, BASIC and Pascal compilers will be made available by this startup firm. A compiler may not be a familiar concept to all who read this, though it is simple to pick up. When your 99/4A receives the run command, it wakes up and "interprets" the program you have told it to run; Every single time. You probably are aware that assembly language is faster. The reason for this is that it is closer to machine language and therefore requires minimal "interpretation." BASIC, however, along with a host of other languages is not that close to machine language. Easier to remember and use, but requiring some form of intervention. The interpreter is often used for BASIC. While it gives instant feedback, an interpreter is slower than a compiled program which is a machine or assembly language program. You write the program as usual, then run the program through a compiler. That program compiles a collection of assembly language or machine code commands. That "compilation" is what you then use when you need that program. The compilation is much faster, almost indistinguishable from a program written in assembly language. The 99/4A only recently got an example of a compiled BASIC and a compiled C. If you have yet to experience the utility of compilers, you will certainly enjoy the Geneve. The increased memory will, of course, make these compilers superior in performance to anything currently on the 99/4A.

A HOST OF GENEVE SPECIFIC PROGRAMS are to come. Lou Phillips of Myarc has estimated that four to five years of effort will be needed to complete the full sweep of programs needed to truely tax the Geneve system and the chips associated with it. During that period, if a new design comes along, the card, not the entire structure can be modified. Almost immediately however, terminal emulators, word processing programs that support such sophisticated typesetting concepts as proportional spacing will begin to arrive.

Potential new products for the Geneve include databases, speadsheets, and paint programs.

The Geneve is one of the most remarkable computers ever introduced. A technical marvel, not a ripoff or anyones clone. We are indeed fortunate that it has been designed to take advantage of the tremendous capability of the the TI99/4A....and its users. It should appeal to everyone, either as a first, a second, or third computer.

COMING SOON FOR T.I. ADVENTURERS,

THERE WERE PROBABLY SEVERAL WAYS TO DEVELOP THE SEQUEL TO ONE OF THE TI'S MOST POPULAR ADVENTURES.. . . . . .. WE SURE DIDNT TAKE THE EASY ONE.

ANNOUNCING THE 4 PLAYER, 170K BYTE, FAST RUNNING SEQUEL TO OLD DARK CAVES,

LEGENDS

A FEW FEATURES: A CHARACTER GENERATOR FOR DESIGNING YOUR OWN PLAYERS, 44 DISTINCT GAME SCREENS, 50 LARGE MONSTERS, EACH UNIQUE. 6 SEPARATE DUNGEONS TO EXPLORE IN SEARCH OF CLUES, WEAPONS AND TREASURES.

STAY AT INNS, USE TELEPORTERS, DRINK POTIONS, AVOID TRAPS, PITFALLS AND WANDERING MONSTERS.

AS YOUR CHARACTERS ADVANCE IN EXPERIENCE AND WEALTH, SEND YOUR PLAYERS OFF TO THE ADVENTURERS GUILD FOR ADDITIONAL TRAINING IN THE ART OF COMBAT. LEARN NEW SPELLS AND SKILLS. YOU WILL NEED THEM.

CUSTOM ASSEMBLY LANGUAGE ROUTINES ACCESS OVER 60,000 BYTES OF GRAPHICS DATA AT VERY HIGH SPEED. THIS ALLOWS US TO PRODUCE SOME OF THE MOST IMPRESSIVE GRAPHICS EVER SEEN ON THE TI.

OVER A YEAR SPENT IN DEVELOPMENT.

DESIGNED BY DONN GRANROS
PROGRAMMED BY DONN GRANROS AND ED JOHNSON.

MANUFACTURED AND DISTRIBUTED BY:
ASGARD SOFTWARE
P.O. BOX 10306
ROCKVILLE, MARYLAND
20850

SOLD THROUGH TENEX COMPUTER EXPRESS AND OTHER T.I. DEALERS OR THROUGH ASGARD.

RELEASE DATE JULY, 1987

SYSTEM REQUIREMENTS,

TI 99-4/A CONSOLE, 32K MEMORY EXPANSION, DISK DRIVE AND EXTENDED BASIC.

CAN BE CONFIGURED TO USE RAM DISK OR TO TAKE ADVANTAGE OF DS/DD DISK DRIVES AND CONTROLLERS.

FURNISHED UNPROTECTED

Coming Soon to a Computer Near You

INITIAL REACTIONS

CAROLE GOLDSTEIN

"KEEP THE FAITH" has to be Myarc's motto as far as their new machine is concerned. Only Myarc could get away with shipping a machine in this condition. At this point I have not had a great deal of hours of experience with this new machine but what time I have spent with it, has been a lesson in controlling frustration.

Problem #1 was a blank demo disk. That's not a big problem. That I could handle. Especially when some of the machine's recipients received no disks.

The next problem came in the discovery that DOS was not a woking version, even though we had been told that DOS had been updated for this version. The manual paints a very desirable picture of an operating system that mirrors that of MS-DOS. But at this point not a single command can be accessed. And that incudes the ability to set the clock, use directory and disk manager functions and more.

What you can do with this machine is load the cartridges that you dumped during the setup stages. From there you can run some of the programs that you were able to run on the 99/4A. On the ones that you can run, you can see a difference when you play with the speed comtrols and it is an impressive difference.

However, there are still more problems. Within the paperwork that contains the addendums, Myarc tells you that they will be distributing the updated DOS and additional programs via telecommunications and the networks. So the next step seemed to be to get online with Compuserve to see what they had to offer and if the program that would allow one to set the system clock was there. The addendums said that at least that program was available now. But most of my terminal programs would not run. The first sympton was total keyboard lockout. Now, that did not happen at least with good old TEII. However, the screen would not reflect this. Whatever I would type would not echo back onto my screen so I could see nothing that I was doing. The only way I knew I was doing something was by looking at the BBS downstairs and seeing that I was accessing it. Of course, the echo can be set through DOS, or so says the manual. Again, since DOS is not operational at this time, I can't use it to correct my problem.

I was also unable to get the programs that I typed in from the manual to work with the version of Advanced Basic that is provided and I cannot run the demo programs for the Basic that I understand are on the disk that I received blank.

The word processor has its problems also, although this seems to be the most usable part of the package as it was shipped. And the features that have been added to TI Writer as we knew it are very worthwhile. The bugs that I have found within MyWord are manageable.

One undocumented surprise was the inclusion of Multiplan files that not only allowed Multiplan to display in 80 columns but, did speed up the heretofor painfully slow operation of that program.

I guess all of the Geneve's problems will be straightened out in time. After all, they did finally ship the machine and it only took a little over two years since they first promised it to us. And they do admit that the system has bugs at this point and that in time they will ship updates. In time.....

INITIAL REACTIONS CONTINUED: Carole Goldstein

Well, its over three weeks now and I have received the so-called improvements. With the help of some of the members of the group, I have been able to progress(?) as Myarc probably intended.

John Behnke found out that the new version of FAST TERM was up on Compuserve. I was still unable to do anything about getting it myself so John downloaded it for me and uploaded it to the BBS downstairs. After Butch transfered the files to my disks, I was able to run the new FAST TERM. However, I did not have documentation so I wrote to Paul Charlton for help. I did not know how to download with the new FAST TERM. Days later, I found the documentation had been put up on Compuserve and I was able to use the capture buffer to get that.

But I still had problems. Yes, I could download, but as soon as I completed a successful download my keyboard locked out and I had to reload the program to continue. I was able to download small programs from the Users' Group BBS this way but I was unable to download the new version of SYSTEM/SYS the updated operating system from Compuserve.

Again, I relied on friends from the group. Todd Kaplan downloaded the 257 sectors for me and brought it over. Great, I thought I was going to see an improvement. With amazement Todd and I starred at that same GPL loader screen. There was still no way to load or access a DOS.

Todd played with the computer for about 20 minutes before he asked me for an axe. Lucky for the 9640, I didn't have one. He saw keys change, runaway keys and the other things that he did not believe when I explained the new machine.

The next experience was the real killer. It takes over a month to put together a newsletter of this size. And I'm at the one month point this weekend. I was using the new DOS (?) and loaded in my main newsletter file. Imagine my disbelief when my newsletter file was only 32 lines long. I had the entire newsletter backed up so I turned immediately to my backup. Also 32 lines long. I used the View File function on MY WORD to look at the file. It showed my file to be 32 lines. I looked at what I had saved to the ram disk. Same thing, 32 lines. At that point I printed the file because I had it in memory. Then I went to do a Show Directory to see if the file size had been shortened. I typed SD, enter, and guess what happened. LOCKUP!

hat was it for one day. I would not turn the monster back on until this morning, but when I did, I loaded it with the old operating system. After loading MY WORD and then my file, I found it intact. It couldn't read it yesterday, but it did save the full file.

I have been in contact with Paul Charlton both by letter and via Compuserve and he is looking into my problems. I still remain optamistic that this monster has a lot of potential. But for right now.... Anyone got an axe?

THE BASIC ASSEMBLER

BY Steve Peacock

T H E B A S I C A S S E M B L E R #8 By Steve Peacock

ADD TWO NUMBERS AND PRINT ANSWER ON THE SCREEN

This month we will tackle a routine that is sort of hard to understand. How to add two numbers and print the answer. It is very easy to add two numbers, but printing the answer is somewhat difficult to understand. To add numbers, they are first loaded in registers and then added. This is done with the LI command.

```
     LI    R7,53
     LI    R8,15
     A     R7,R8
```

The above loads 53 into register 7 and loads 15 into register 8. It then adds the two numbers together and puts the answer in register 8 (the second register). Register 8 now contains 68, the number we want to print. This number can not be printed as it is. We need to first break it down to a 6 and an 8.

Register 8 is moved into register 5 and register 4 is cleared.

```
     MOV   R8,R5
     CLR   R4
```

We now divide register 4 by 10.

```
     DIV   @DIV10,R4      *DIV10 was set to ><<000A
```

In TI Assembly language the division is done like this: The register specified is divided by the number, the dividend is put in the specified register and the remainder is put in the NEXT CONSECUTIVE register. At this point register 5 holds >><<0006 and register 5 holds >><<0008. If we add >><<0030 to register 5 we g
et
>><<0038. This is the code to print '8' (38 hex = 56 dec) or the ASCII for '8'.

```
     A     @HEX30,R5      *HEX30 was set to >><<0030
     MOV   R5,@PNTANS
```

The MOV command, moves register 5 into PNTANS. This move is done in binary form, PNTANS now contains 0000000000111000b. This is the code to print '8'. Now move register 4 (>><<0006) into register 5, then divide by 10 and add hex 30 as before. Register 5 now contains >><<0036. This is the code to print '6'. This number now must be put in the left half of PNTANS, without disturbing the right half of PNTANS. To do this we use the command, SLA.

```
     SLA   R5,8
```

This command is carried out in binary numbers. Before the shift register 5 contained 0000000000110110b, after the shift register 5 contains

0011011000000000b.

```
     MOVB R5,@PNTANS
```

The command MOVB causes the left half of the word to be moved, replacing the current left half. So PNTANS now contains 0011011000111000b. This is the final code that we need to print our answer on the screen. 00110110b is 36h and 54d, while 00111000b is 38h and 56d. All that is left to do is print this word. This is done in the last few lines of the program.

As you can see this routine will only work for numbers up to 99d. Experiment yourself and see if you can print a three digit number. There is more than one way to do it.

```
###############################################################################
100 REM PROGRAM BA8B-->><<Basic Assembler #8 Basic Version
110 REM ADD TWO NUMBERS AND PRINT ANSWER ON SCREEN
120 REM (C)1985 S. PEACOCK
130 REM YOU MAY WANT A 'CALL CLEAR' HERE
140 DEC48=48 !HEX30 IS DEC48
150 DIV10=10
160 REG7=53
170 REG8=15
180 REG8=REG7+REG8
190 REG5=REG8
200 REG4=INT(REG5/DIV10)
210 REG5=((REG5/DIV10)-REG4)
220 REG5=REG5+DEC48
230 PNTANS1=REG5
240 REG5=REG4+DEC48
250 PNTANS2=REG5
260 CALL HCHAR(2,5,(PNTANS2))
270 CALL HCHAR(2,6,(PNTANS1))
280 GOTO 280
290 END
```

```
###############################################################################
*******************************************************************************
*
*PROGRAM BA8A-->><<Basic Assembler #8 Assembly Version
*ADD TWO NUMBERS AND PRINT ANSWER ON SCREEN
*(C)1985 S. PEACOCK
*
*******************************************************************************
       REF  VMBW
       DEF  START
PNTANS BSS  2            *BlockStartingSymbol
*************************RESERVES 2 BYTES FOR
*************************THE ANSWER
HEX30  DATA >><<0030       *HEX 30 TO BE USED TO ADD
*************************TO REMAINDER AFTER DIVISION
*************************BY 10. THIS IS NEEDED TO CONVERT A
*************************NUMBER TO IT'S CODE, THAT CAN BE
*************************PRINTED. EX >><<0009 + >><<0030 = >><<0039
*************************>><<0039 IS 57d, THE ASCII FOR '9'
DIV10  DATA >><<000A       *HEX 10 TO BE USED TO DIVIDE
*************************BY 10
START  LI   R7,53        *PUT 53 IN REG. 7  THESE ARE THE TWO
```

```
       LI   R8,15          *PUT 15 IN REG. 8  NUMBERS WE WILL ADD
       A    R7,R8          *ADD REG. 7 AND REG. 8 (68d)
       MOV  R8,R5          *MOVE REG. 8 (68d) INTO REG. 5
       CLR  R4             *CLEAR REG. 4
       DIV  @DIV10,R4      *DIVIDE REG. 4 BY 10.
*************************THIS COMMAND IMPLIES THAT REG. 4 AND REG. 5
*************************WILL BE USED IN THE DIVISION. WHEN
*************************REG. 4 IS SPECIFIED THE NUMBER IN THE
*************************NEXT REGISTER IS DIVIDED BY THE DIVISOR.
*************************THE DIVIDEND IS PUT IN REG. 4 AND THE
*************************REMAINDER IS PUT IN REG. 5
*************************BEFORE THE DIVISION REG. 4=><<0000 REG. 5=><<0044
*************************AFTER THE DIVISION REG. 4=><<0006 REG. 5=><<0008
       A    @HEX30,R5      *ADD ><<0030 TO REG. 5. REG. 5 NOW =
*************************><<0008+><<0030 OR ><<0038. THIS IS THE
*************************THE CODE TO PRINT THE NUMBER '8'. THE
*************************SECOND DIGIT OF OUR ANSWER
       MOV  R5,@PNTANS     *(PrintAnswer) NOW CONTAINS ><<0038
       MOV  R4,R5          *MOVE REG. 4 (><<0006) INTO REG. 5
       CLR  R4             *CLEAR REG. 5
       DIV  @DIV10,R4      *DIVIDE REG. 4 BY 10 PUT DIVIDEND IN REG. 4 AND
*************************REMAINDER IN REG. 5
*************************BEFORE DIVISION REG. 4=><<0006, REG. 5=><<0000
*************************AFTER DIVISION REG. 4=><<0000, REG. 5=><<0006
*************************(6/10=0 remainder of 6).
       A    @HEX30,R5      *ADD 30 TO REG. 5. REG. 5 NOW = ><<0036 (CODE FOR '6')
       SLA  R5,8           *ShiftLeftArithmetic
*************************THIS COMMAND TAKES THE CONTENTS OF REG. 5 AND SHIFTS
*************************IT 8 PLACES TO THE LEFT. THIS IS DONE
*************************USING BINARY NUMBERS.
*************************BEFORE THE SHIFT REG. 5=0000000000110110
*************************AFTER THE SHIFT REG. 5=0011011000000000
       MOVB R5,@PNTANS     *MOVE LEFT HALF OF REG. 5 INTO PNTANS
*************************BEFORE THE MOVB PNTANS=0000000000111000
*************************AFTER THE MOVB PNTANS=0011011000111000
*************************THIS MOVE USES THE MOVB COMMAND. THIS MOVES
*************************THE LEFT HALF, NOT THE WHOLE, AS DOES THE
*************************COMMAND MOV THAT WAS USED EARLIER.
       LI   R0,35          *SCREEN ADDRESS TO PRINT ANSWER
       LI   R1,PNTANS      *LOAD REG. 1 WITH PNTANS
       LI   R2,2           *TWO BYTES TO PRINT '6' AND '8'
       BLWP @VMBW          *PRINT '68'
       JMP  $              *JUMP TO 'SELF'
       END
```

- - - - - - - -

T H E B A S I C A S S E M B L E R #9 By Steve Peacock

COUNT FROM 0 TO 999,999

This program will demonstrate the difference in the speed of Extended Basis and Assembly. I am presenting a counting routine that will count, and display the number 000,000 to 999,999. Let me say that this program is written to show the difference in speed. There are more efficient way to count, but that is not the purpose of this program.

The first part of BASA, loads registers 4 to register 9 with the number zero. The second part then prints each of these registers to the screen. In order to

add to a register the number is added to the right byte. However when you print to the screen, the left byte is used. This requires the use of the command SWPB, and the routine CNG (ChaNGe back) - SWPB. This allows you to add, then print then add again.

When I ran both versions I found that the Extended Basic version took 2min. 50sec. to count from 0 to 1000. The Assembly version took 1.05sec. Assembly ran 161.9 times faster! OK Robbie, how fast can you count and display in FORTH, using the same inefficient program?

```
###############################################################################

100 REM PROGRAM BA9B=><<Basic Assembler #9 Basic Version
110 REM COUNT FROM 0 TO 999,999
120 REM (C)1985 S. PEACOCK
130 REM YOU MAY WANT A 'CALL CLEAR' HERE
140 R4=0
150 R5=0
160 R6=0
170 R7=0
180 R8=0
190 R9=0
200 CALL HCHAR(20,15,R4+48)
210 CALL HCHAR(20,14,R5+48)
220 CALL HCHAR(20,13,R6+48)
230 CALL HCHAR(20,12,44)
240 CALL HCHAR(20,11,R7+48)
250 CALL HCHAR(20,10,R8+48)
260 CALL HCHAR(20,9,R9+48)
270 R4=R4+1
280 IF R4=9 THEN 450
290 R4=0
300 R5=R5+1
310 IF R5=9 THEN 450
320 R5=0
330 R6=R6+1
340 IF R6=9 THEN 450
350 R6=0
360 R7=R7+1
370 IF R7=9 THEN 450
380 R7=0
390 R8=R8+1
400 IF R8=9 THEN 450
410 R8=0
420 R9=R9+1
430 IF R9=9 THEN 450
440 GOTO 440
450 GOTO 200 !CHANGE BACK IS NOT NEEDED IN BASIC. THIS GOTO IS NEEDED TO KEEP TH
E CORECT COUNT IN R1 TO R9.
460 END

###############################################################################

*******************************************************************************
*
*PROGRAM BA9A=><<Basic Assembler #9 Assembly Version
*COUNT FROM 0 TO 999,999
*(C)1985 S. PEACOCK
```

```
*
*******************************************************************************
       REF  VSBW          *REF TO VIDEO SINGLE BYTE WRITE
       DEF  START         *START OF PROGRAM
START  LI   R4,>>3000       ****
       LI   R5,>>3000       *
       LI   R6,>>3000       *LOAD REG. 4 TO REG. 9 WITH ZERO
       LI   R7,>>3000       *
       LI   R8,>>3000       *
       LI   R9,>>3000       ****
PRINT  LI   R0,403        ****
       MOV  R4,R1         *PRINT A ZERO AT SCREEN LOCATION 403
       BLWP @VSBW         *THEN DECREASE THE SCREEN LOCATION
       DEC  R0            *BY ONE AND PRINT ZERO AGAIN. DO
       MOV  R5,R1         *THIS A THIRD TIME, THEN PRINT A
       BLWP @VSBW         *COMMA. THEN PRINT THREE MORE
       DEC  R0            *ZEROS.
       MOV  R6,R1         *
       BLWP @VSBW         *EACH TIME THE PROGRAM LOOPS THE PRINT
       DEC  R0            *ROUTINE WILL BE UPDATED AND WRITTEN
       LI   R1,>>2C00       *TO THE SCREEN.
       BLWP @VSBW         *
       DEC  R0            *
       MOV  R7,R1         *
       BLWP @VSBW         *
       DEC  R0            *
       MOV  R8,R1         *
       BLWP @VSBW         *
       DEC  R0            *
       MOV  R9,R1         *
       BLWP @VSBW         ****
*****************************
       SWPB R4            *REVERSE BYTES IN REG. 4 >>3000 TO >>0030 ETC.
       INC  R4            *INCREASE REG. 4 BY ONE
       CI   R4,>>0039       *COMPARE REG. 4 TO 9, >>0039
       JLE  CNG4          *IF LESS THAN OR EQUAL
       LI   R4,>>0030       *    THEN RESET TO ZERO
       SWPB R5            *
       INC  R5            *IN ORDER TO INCRIMENT A REGISTER, THE
       CI   R5,>>0039       *NUMBER MUST BE IN THE RIGHT BYTE.
       JLE  CNG5          *
       LI   R5,>>0030       *IN ORDER TO PRINT A NUMBER, IT MUST BE
       SWPB R6            *IN THE LEFT BYTE.
       INC  R6            *
       CI   R6,>>0039       *THIS SECTION COUNTS - 000000 / 000001 / 000002 ETC.
       JLE  CNG6          *BY INCREASING EACH REGISTER SEPARATELY. THIS
       LI   R6,>>0030       *IS NOT AN EFFICIENT WAY TO DO IT, BUT IT WORKS.
       SWPB R7            *
       INC  R7            *
       CI   R7,>>0039       *
       JLE  CNG7          *
       LI   R7,>>0030       *
       SWPB R8            *
       INC  R8            *
       CI   R8,>>0039       *
       JLE  CNG8          *
       LI   R8,>>0030       *
       SWPB R9            *
```



```
       INC  R9            *
       CI   R9,>>0039       *
       JLE  CNG9          ****
       JMP  $             *WHEN DONE (999,999) JUMP TO SELF
CNG9   SWPB R9            ****
CNG8   SWPB R8            *IN ORDER TO PRINT THE NEW
CNG7   SWPB R7            *NUMBER THE BYTES MUST BE
CNG6   SWPB R6            *SWAPPED BACK - >>0033 BECOMES >>3300 ETC.
CNG5   SWPB R5            *THEN THE NUMBER CAN BE PRINTED.
CNG4   SWPB R4            ****
       JMP  PRINT         *JUMP TO PRINT ROUTINE
       END
```

T H E B A S I C A S S E M B L E R #10 By Steve Peacock

40 COLUMN TEXT MODE

This month I will change my basic format (no pun intended) and not have a BASIC program to go with the Assembly program. The reason for this is that I am demonstrating how to use the 40 column text mode. There is no easy way, that I know of, to do this in BASIC.

In text mode there are 960 screen positions, numbered 0 to 959. The screen has 24 rows of 40 columns. The top left position is numbered zero, with the bottom right numbered 959. As you recall in the regular (graphic) mode there are only 767 positions.

In the text mode sprites can not be used and you can only have one color for all of the letters and one screen color. These colors can be any of the 16 standard colors that the TI can produce. To control the colors VDP write only register 7 is used. The left digit is the text color and the right digit is the screen/background color. Whenever you change the value of VDP write only register 7, you should copy the byte and place it at CPU address >>83D4.

In the text mode, the letters are not made up of an 8 X 8 grid. They are only 6 X 8. The TI will automatically set up the new set of letters for you. In a later Basic Assembler we will learn how to redefine this new set.

To put the TI in the text mode, bit #3 of VDP write only register one must be set. Bits 0, 1, and 2 are also set. They are left set most of the time. The correct value to be written into VDP write only register #1 would then be 11110000 or 128 + 64 + 32 + 16 + 0 + 0 + 0 + 0 or 240d >>F0.

When a key is pressed and you are using KSCAN the ASCII value is placed in the address >>8375. This can then be moved into register 1, and printed on the screen. Any printable character can thus be printed on the screen. In this months program I have put in a check to see if the enter key is pressed. This is ASCII code 13d. If it has then the program jumps to a clear screen section. The program could also have a check for the arrow keys to move the print position to any part of the screen. This would be done by checking the codes for FCTN/S,E,D, and X, then adjusting the value of register 0 as needed (-1, -40, +1, or +40).

```
###############################################################################

100 REM PROGRAM BA10B==>>Basic Assembler #10 Basic Version
110 REM 40 COLUMN TEXT MODE
120 REM (C)1986 S. PEACOCK
```

```
130 PRINT "NO BASIC COUNTERPART FOR 40 COLUMN MODE."
140 END

*********************************************************************************

**************************************************************************
*
*PROGRAM BA10A-->><<Basic Assembler #10 Assembly Version
 COLUMN TEXT MODE
*(C)1986 S. PEACOCK
*
**************************************************************************
       REF  VWTR,KSCAN,VSBW *REFERENCES NEEDED IN PROGRAM
       DEF  START           *START OF PROGRAM
START  LI   R0,>><<0719       *BLACK TEXT (>><<1) ON A RED (>><<9) SCREEN
************************WRITTEN TO REGISTER 7. CHANGE THE 1
************************AND 9 TO ANY COLOR YOU WANT.
       BLWP @VWTR           *WRITE THE INFORMATION
       LI   R0,>><<01F0       *>><<F0 (240d) PUT INTO VDP REG. 1,
************************SETS TEXT MODE.
       BLWP @VWTR           *WRITE THE INFORMATION
       SWPB R0              *PUT VALUE IN VDP REG. 1 INTO THE
************************LEFT BYTE REG. 0
       MOVB R0,@>><<83D4      *PUT IT IN >><<83D4
       CLR  @>><<8374         *CLEAR
       CLR  R0              *CLEAR -SET UP KEYBOARD SCAN
       CLR  R1              *CLEAR/
       JMP  CLSCN           *JUMP TO THE CLEAR SCREEN SECTION
LOOP   BLWP @KSCAN          *BRANCH TO THE KEYBOARD SCAN
       MOVB @>><<837C,R1      *PUT STATUS BYTE IN REG. 1
       COC  @NOKEY,R1       *COMPARE ONE CORRESPONDING-->><<LEFT BYTE
************************OF REG. 1 AND THE VALUE IN NOKEY
       LIMI 2               *ENABLE    VDP INTERRUPTS
       LIMI 0               *DISABLE   (FCTN/QUIT WILL WORK)
       JNE  LOOP            *IF NO KEY HAS BEEN PRESSED JUMP TO LOOP
       MOV  @>><<8375,R1      *PUT THE ASCII CODE OF THE KEY PRESSED
************************IN REG. 1
       CI   R1,13           *COMPARE IT TO 13 (ENTER KEY)
       JEQ  CLSCN           *IF ENTER PRESSED, THEN JUMP TO CLEAR SCREEN
       MOVB @>><<8375,R1      *MOVE THE ASCII CODE OF THE KEY PRESSED
************************INTO THE LEFT BYTE OF REG. 1
       BLWP @VSBW           *PRINT THE LETTER ON THE SCREEN
       INC  R0              *ADD 1 TO REG. 0 (THE PRINTING POSITION)
       CI   R0,961          *SEE IF THE LAST POSITION HAS BEEN REACHED
       JLT  LOOP            *IF NOT JUMP TO MAIN LOOP
       CLR  R0              *IF IT HAS RESET PRINT POSITION TO TOP LEFT
       JMP  LOOP            *JUMP TO MAIN LOOP
CLSCN  LI   R0,0            ***
CLRS   LI   R1,>><<2000       *CLEAR SCREEN SECTION
       BLWP @VSBW           *
       INC  R0              *PRINT A SPACE TO ALL 959 POSITIONS
       CI   R0,959          *
       JLE  CLRS            *
       JMP  LOOP            ***
NOKEY  DATA >><<2000         *DATA FOR THE COC
************************IF THE LABEL YOU USE TO START YOUR PROGRAM
************************IS PUT IN THE OPERAND SECTION, OF THE END
************************INSTRUCTION, THEN YOUR PROGRAM WILL AUTO START
```



```
      END  START
```

FROM OTHER ORPHANAGES

Jack Topham

The CALGARY 99er UG reports on the latest FUNLWEB FARMS, a disk called FUNLPLUS. The disk comes as a Flippie with vs 3.4 FUNLWRITER as a bonus. Included as utilities are active Cataloger, Banner program, Desk Calendar program, a Label maker, a variety of templates for Borders and Leterheads, and much more. $8 for the lot.
JACK SUGHRUE, BOX 459, EAST DOUGLAS, MA 01516.

From FOUNTAIN VALLEY, CA. Jim Swedlow has a TI WRITER Tip. The period after a letter or number causes the formatter to skip two spaces. Place a caret after the period and only one space will be skipped. Thanx Jim.

From the SUNCOAST BEEPER comes some good news for Gemini 10X owners. A plug in chip is available that replaces Italic font with LETTER QUALITY printing! Contact ESP Corp. 7900 North Tamiami Trail, Sarasota, FL 34243 or call (813) 355-6797.

The LA 99er UG warns us all that new legislation is afoot that would allow the phone companies to place a premium on Modem useage vs voice. Its called "COMPUTER INQUIRY III" Please write to the Honorable Mark Fowler, chairman of the FCC, WDC 20554. Tell him in no uncertain terms of your opposition to this bill. It's your dollars!

More good news for Gemini 10X owners. This time from BAYOU BYTE UG in Lake Charles, LA. A new proper manual is now available for $5 plus P/H. Write STAR MICRONICS, INC., P.O. Box 1630, EL TORO, CA 92630. Be sure and ask for the TI99/4A addendum. It's about time.

The 99er UG in Champaign, IL has several tid bits for us this month. Steve Trencansky of 621 Lacey Dr.,Endwel, NY 13760 is offering a package of 11 XBASIC utilities. Included are programs to convert Uncompressed object files to compressed and vice versa. A program that compares D/F80 and D/V163 files for differences. Program to List XBASIC programs in two columns, etc. etc. Send $10 for the lot.
John Birdwell has upgraded his already great DISK UTILITIES to vs 3.2. Fairware and in our Club library. Utilities include: Compare Disks, Print Sectors, Sector Editor, Find String, Disk Report, Directory/Comments, Printer Setup, Screen Colors, and complete File Utilities. One of the very best.

The LA 99er UG had a couple of neat Tips. Try hooking up an 80 Col monitor to your TI 99 through the RS232 card. Instructions they say are in the manual. You can access it thru XBASIC as follows:

```
LINPUT #1:A$
PRINT #1:A$
```

They also listed an XB program that will let you change the screen colors and have them stay until you leave XB.

```
100 CALL CLEAR
110 B=2 :: F=16 ! YOUR CHOICE
120 C=16*(F-1)+(B-1)
130 CALL INIT
135 CALL LOAD(9984,C,C,C,C,C,C,C,C,2,0,1
5+B,4,3)
140 CALL LOAD(9999,48,2,0,8,0,2,1,39,0,2
0,8,4,32,32,36,2,0,8,8,4)
150 CALL LOAD(10021,32,32,36,2,0,8,16,4,
32,32,36,2,0,8,24,4,32,32,36,4,91)
160 CALL LOAD(-31804,39,8)
170 CALL LOAD(-31952,255,231,255,231)
180 END
```

Set B><<ackground and F><<oreground colors in line 110 and SAVE as LOAD.

The DECATOR UG has shown great wisdom and published the Listing for John BEHNKE's POSTCARD program. Is John giving autographs?

S.M.A.G. UG has published a condensed listing of all the Star N10X printer codes. Send me a SASE, and I'll get a cc off to you. 501 Shawn Ln, Prospect Hts, IL 60070.

Ollie Hebert reviewed TIWRITER TIPS TRICKS by Joyce Corker. He reports that it is worth the price of $5. Write the Boston Computer Society, TI99 UG, One Center Plaza, Boston, MA 02108.
Ollie also shared an incite to the invisable character #127. Pages 145 and 146 list the Special Control Characters 0-127 but fails to list a key press for 127. He has found that CTRL U, FCTN I, CTRl U are the correct keypresses even tho nothing appears on the screen. To make it visable use a sector editor on the file CHARA1. Go to the 4th sector and change the last 4 bytes from 0000 to 5454 (triple quotes). Now do the same thing to CHARA2 file. Vola! 127 on the screen at last!
They also report that Colored printer ribbons are available for the Star NX-10, Gemini 10X, SG10, and the Epson MX80. Colors are Blue, Brown, Green, Purple, Red, and Yellow as well as Black. Call Joe McCormick at 1 800 438 7745. Prices include UPS delivery, and he accepts credit cards.

From MOArk UG comes a reminder for those who want to use a printer on old TI modules that were not designed for PIO.
Tell the computer that you will not be using a printer, then create your data files as usual. Then enter a ficticious printer callup.(ie RS232/8). When screen says DEVICE NOT FOUND, enter PIO and the computer will print to your EPSON compatable parallel printer. Works on most TI cartridges they say.

The DOWNEAST UG reports on FUNPLUS, a full disk of templates, utilities, tutorials, reviews, and programs that let you easily access the power of FUNLWRITER and DM1000 programs. Go for this one and FUNLWRITER will be sent as a free bonus. $8 to Jack Sughrue, Box 459, East Douglas, MA 01516.

The AMARILLO UG offered a couple of TIPS: 1) To get the computer to read a CALL KEY, Alpha lock up or down, use key-unit 3. CALL KEY(3,K,S). 2) To disable the Quit (FCTN=) in XB, enter CALL INIT :: CALL LOAD(-31806,16). To restore, replace the 16 with a 0. 3) To find out the TI Version # of your XB cart, try this: CALL VERSION(X) :: PRINT X .

MADHUG UG says that if your WIDGET WIGGLES, get some double sided tape and stick the foot down. Eliminates a possible loose connection that may lock up ye olde 99. Next they offer a way to LIST and COPY a TI PROTECTED XB program. LOAD the file, then enter CALL INIT then enter CALL LOAD(-31931,0). The SAVEd file will be unPROTECTED.

Jim Swedlow writing in the ROM Newsletter shares some neat information. Did you know that BELL 103A is the standard format for transmiting data by telephone at 300 BAUD?
Or that BELL 212A is the Standard at 1200 BAUD? BAUD is a unit that measures the speed of data transmission. One BAUD is one bit per second. 1200 BAUD is 1200 bits per second and four times faster than 300 BAUD. Thanx Jim.

The SPIRIT of 99 Newsletter had the BEST of '85 and reviewed the hidden TI screen "REVIEW MODULE LIBRARY". Seems TI had thought about an extender box that would hold up to 16 cartridges and be available on a screen menu. This would allow console BASIC to access all of the CALL routines within the plugged in 16 cartridges. Todate no one has offered such an add-on. Perhaps the Gram Kracker or the Super Cart did it in. We now have all the cartridges on disk and multi 16 item menu pages are easily created. Always interesting to think what might have been if TI....

The GREATER AKRON Ug reports that 2400 BAUD modems are available to BBS operators from USRobotics for $350 and 9600 BAUD for $495. Call (312) 982 5010 if you are a BBS operator.

NOTES FROM A NON-PROGRAMMER
How to Set Up a General Index
By Anne Dhein

What would the TI community do without its user's groups? They're great! Where else could computer owners meet on a regular basis and look forward to sharing the latest information about their machines? Most groups also maintain a library of user-written software. Club membership can usally be broken down into two main types of user group supporters those that show up for most meetings - those who program and those who don't. It's easy to see why programmers keep coming. A lot of insight is gained by sharing new techniques and discussing the latest in hardware modification projects. More experienced programmers are available to help a fellow member chase down that elusive bug.

But have you ever wondered what keeps non-programmers coming back, or how their computers are used during the month? Being in this second category myself, I happen to know that these people are as addicted to their computers as any programmer, and just as fascinated by every new application that comes out. They are the ones you find at meetings oohing and aahing appreciatively over demonstrations of programming skill by fellow members. The common denominator is the interest in exchanging information. If programs can't be shared by the non-programmers, information can, and this is one of the ways that a computer can be made productive.

Last January, after an unproductive search through a year's worth of Computer Shoppers for something I KNOW I saw in one of them somewhere, I took it upon myself to make a general subject index for the monthly TI Forum in the Computer Shopper.

In case you are not familiar with this excellent national monthly publication, it is one of the few magazines which has ever run a monthly column for the 99/4A. It is unique in that the column is still going strong today, and in it one finds the opinions and impressions of those who write exclusively for and about the TI Community. Over the course of a year, these columns cover EVERYTHING - from the briefest mention of an interesting event or personality to detailed schematics and program listings to in-depth looks at a bulletin board or some particular program.

The Index consists of anything mentioned, even briefly, in any of last year's TI columns. Each subject is listed in capitals, usually with an identifying comment. Subjects are cross referenced where it seems desirable. The Index was made on the TI Writer by setting the left margin at 0 and the right at 57. Page and month references were typed at the end of the line. The "CS" on the very end stands for "Computer Shopper" in case I ever decide to merge another magazine's general index with this one. The duplicate line function (control 5) was pressed several times so that the year doesn't ever have to be typed in after the first time - and you don't have to change the page number or month very often either. You are now free to type in the headings and comments at the beginning of each line.

To sort the list, I used the TI Sort utility by John Clulow, which is in our club library. It's an excellent program - simple and efficient. Because the TI Sort program sorts by ASCII number, it's important that all the headings be in capitals. Otherwise, lower case is sorted after all upper case. Since TI Sort will sort only 300 TI Writer lines at a time, the file was broken into two shorter files; each sorted, merged, and resorted. The files were then recombined into one long sorted file.

The final step was to columnize the text. There are many programs floating around that will do this. The one I used, Doubleprint by Tom Freeman, came from the Genial Traveler - Barry Traver's great magazine-on-a-disk. The TI Writer file was prepared for columnizing by following the simple instructions that come with the program. ...And I did find the material I was originally searching for. It was easy! When I finished the Index I simply looked it up.

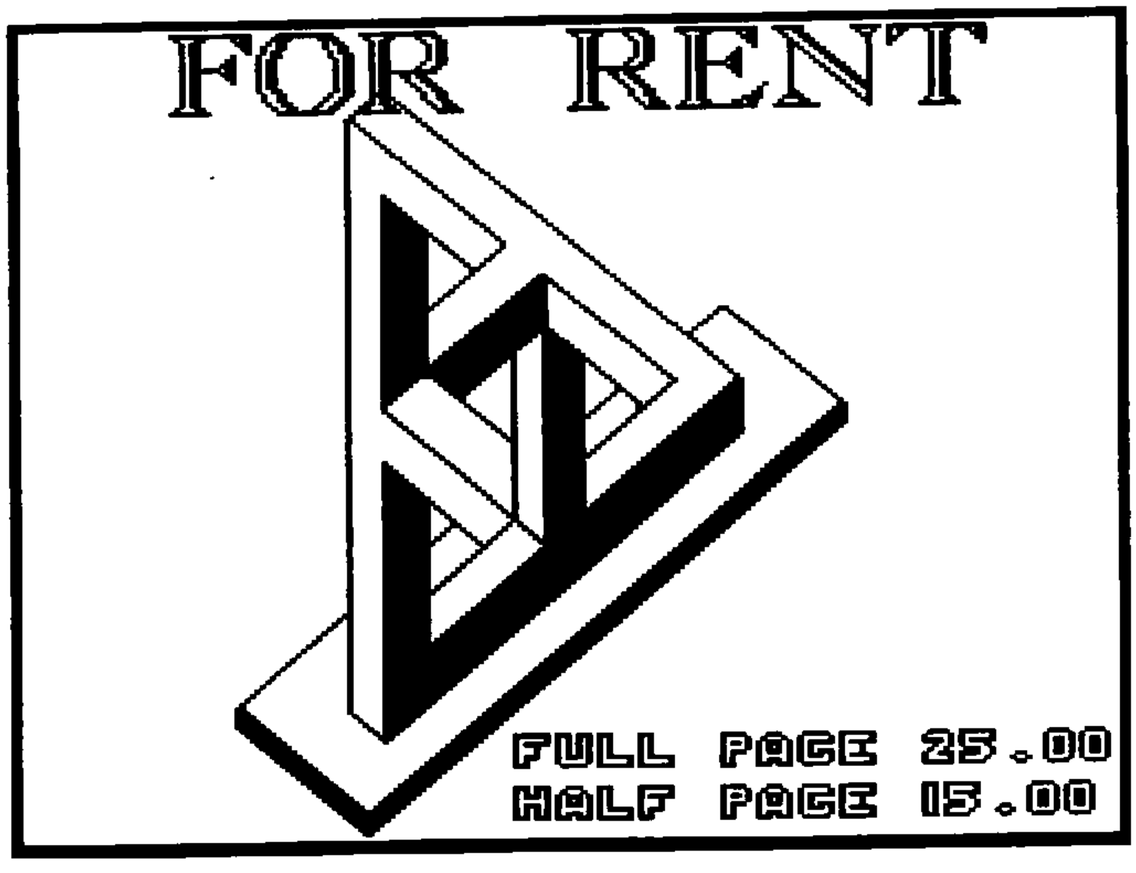
So, using resources that came from a Users' Group, I was able to do somthing rewarding to myself with my computer, and, most rewarding of all, to share it with fellow users. Sharing! That's what our users' groups are all about.

COMPUTER SHOPPER 99/4A INDEX 1986

99 HOME SENTRY by CorComp 214 08 86 CS
AGEE, WARREN; Recipe Writer from Asgard 230 06 86 CS
AGEE, WARREN; c99 Tips and Tricks 203 10 86 CS
AGEE, WARREN; profile 203 10 86 CS
AMNION HELP-LINE; Dr.Guy-Steffan Romano 93 11 86 CS
ASGARD SOFTWARE; Graphx pictures 238 09 86 CS
ASGARD SOFTWARE; Pre-Scan It!; J.P. Hoddie 124 12 86 CS
ASGARD SOFTWARE; Pre-Scan It!; J.Peter Hoddie 93 11 86 CS
ASGARD SOFTWARE; Quick Dialer by Mark Larry 230 06 86 CS
ASGARD SOFTWARE; Recipe Writer data base 230 06 86 CS
ASGARD SOFTWARE; Software Producer of Year 124 12 86 CS
ASGARD SOFTWARE; new software at TICOFF (NJ) 230 06 86 CS
ASSEMBLY LANGUAGE pgm listing; Charal Set 260 12 86 CS
ASSEMBLY LANGUAGE; Sieve listing and Tutorial 91 10 86 CS
ASSEMBLY LANGUAGE; and Super Space cartridge 85 06 86 CS
ASSEMBLY LANGUAGE; and c99 230 06 86 CS
ASSEMBLY LANGUAGE; article by Glen Davis 91 10 86 CS
ASSEMBLY LANGUAGE; tips, tricks and advice 93 09 86 CS
ASSEMBLY-DISASSEMBLY book; new, Schmidt/RData 93 11 86 CS
BANNER MAKER program from Quality 99 59 04 86 CS
BASIC LANGUAGE Database; Gary Cox (Fairware) 203 10 86 CS
BASIC LANGUAGE; converting to c99; lstngs 124 12 86 CS
BASIC LANGUAGE; listing, Call Key routine 168 06 86 CS
BLIND COMPUTER USER; Angelo Morris 224 11 86 CS
BOSTON COMPUTER SOCIETY; TIN Tips and Tricks 124 12 86 CS
BRAIN, The; program from Datax 240 09 86 CS
BULLETIN BOARD SOFTWARE; 60 04 86 CS
BULLETIN BOARD SOFTWARE; TECHIE (Fairware) 60 04 86 CS
BULLETIN BOARD SOFTWARE; TI COMM (Fairware) 60 04 86 CS
BULLETIN BOARD SOFTWARE; TIBBS by R.Fowler 60 04 86 CS
BULLETIN BOARDS and RLE Graphics 214 08 86 CS
BULLETIN BOARDS; Boston Computer Society 93 11 86 CS
BULLETIN BOARDS; Delphi; Tymnet 124 12 86 CS
BULLETIN BOARDS; Forth Data Transfer Protocol 86 06 86 CS
BULLETIN BOARDS; Genie Roundtable 75 05 86 CS
BULLETIN BOARDS; Houston Users Group TIBBS 93 11 86 CS
BULLETIN BOARDS; PC Pursuit 75 03 86 CS
BULLETIN BOARDS; PC Pursuit (GTE/Telenet) 93 11 86 CS
BULLETIN BOARDS; Phoenix Users Group TIBBS 93 11 86 CS
BULLETIN BOARDS; Source; TEXNET replaced 123 12 86 CS
BULLETIN BOARDS; TEXNET replaced by TI-SIG 123 12 86 CS
BULLETIN BOARDS; TI Forum - CompuServe 79 01 86 CS
BULLETIN BOARDS; TI Info Network - Delphi 79 01 86 CS
BULLETIN BOARDS; Texnet - Source 79 01 86 CS
BULLETIN BOARDS; local 59 04 86 CS
BUSINESS GRAPHS 99 by Mike McCann 75 05 86 CS
BYTEMASTER COMPUTER SERVICES; Super 99 Mntl 230 06 86 CS
C99 LANGUAGE; Clint Pulley, author 124 12 86 CS
C99 LANGUAGE; Fairware by Clint Pulley 73 07 86 CS
C99 LANGUAGE; It's Implications 77 02 86 CS
C99 LANGUAGE; Tips and Tricks by Warren Agee 203 10 86 CS
C99 LANGUAGE; c99 program by Clint Pulley 230 06 86 CS
C99 LANGUAGE; continued support by TI Forum 201 10 86 CS
C99 LANGUAGE; conversion from Basic; listings 124 12 86 CS
C99 LANGUAGE; listing 81 08 86 CS
C99 LANGUAGE; tutorial 73 07 86 CS
C99 LANGUAGE; tutorial 81 08 86 CS
C99 Tips and Tricks by Warren Agee 203 10 86 CS
CALL KEY, uses of; article by Glen Davis 95 06 86 CS
CASE, COE; program to copy IBM fmatted dsks 214 08 86 CS
CASSETTE RECORDER and cable; expanding TI 182 07 86 CS
CATALOGS; Triton 124 12 86 CS
CHANDLER, ERNEST; Joy Paint 99 program 236 09 86 CS
CHARAI file; for TI Writer, Fastern, etc. 123 12 86 CS
CHARLTON, PAUL; Fast-term and RLE Graphics 214 08 86 CS
CHARLTON, PAUL; Fast-term for Super Space 85 06 86 CS
CHART MAKER II pgm from Quality Software 73 07 86 CS
CLOCK CRYSTAL; changing to speed up computer 201 10 86 CS
CLULOW, JOHN and R.Gries; TI COMM BBS softwr 60 04 86 CS
CLULOW, JOHN; Super Cart kit and software 85 06 86 CS
COMPUSERVE, TI Forum 79 01 86 CS
COMPUSERVE; Mega Wars III multi-player game 200 10 86 CS
CONTEST; First Annual TI Forum, rules, prizes 93 09 86 CS
CONVERTING BASIC TO C99 (includes listings! 124 12 86 CS
CORCOMP CLOCK AND TRIPLE TECH CARDS; new sfte 93 11 86 CS
CORCOMP and the Phoenix Computer 59 04 86 CS
CORCOMP; 99 Home Sentry and Mem Expansion 214 08 86 CS
CORTER, JAYCEE; TIN Tips and Tricks, review 124 12 86 CS
COX, GARY; Basic Database (Fairware) 203 10 86 CS
COX, GARY; Weather Forcaster (Fairware) 203 10 86 CS
CRANDALL, BLAINE; SySop for Source's TI-SIG 123 12 86 CS
DARLING, SCOTT; BBS freeware 60 04 86 CS
DATA BASES; Basic DB by Gary Cox (Fairware) 203 10 86 CS
DATA BASES; Recipe Writer from Asgard 230 06 86 CS
DATA TRANSFER PROTOCOL TRANSLATION by G.Davis 86 06 86 CS
DATABIOTICS; Super Space cartridge 85 06 86 CS
DATAI; The Brain, program 240 09 86 CS
DAVIS, GLEN; Data Transfer Protocol Transl. 86 06 86 CS
DAVIS, GLEN; Forth Floating Point Fixes 86 06 86 CS
DAVIS, GLEN; Inner Limits, assembly advice 93 09 86 CS
DAVIS, GLEN; Inner Limits; Assembly article 91 10 86 CS
DAVIS, GLEN; Some Suggested (Forth) Reading 86 06 86 CS
DAVIS, GLEN; The Inner Limits, Forth article 93 11 86 CS
DAVIS, GLEN; The Inner Limits, article 123 12 86 CS
DAVIS, GLEN; article, Using Call Key 85 06 86 CS
DCOPY program to Archive and copy; freeware 214 08 86 CS
DELPHI BBS and Tymnet 124 12 86 CS
DELPHI BBS, TI Info Network 79 01 86 CS
DISK DRIVES; expanding the TI 182 07 86 CS
DISK MANAGER IV from Quality 99 59 04 86 CS
DISK ONLY SOFTWARE; Business Graphs 99 75 05 86 CS
DISKASSEMBLER program from Miller's Graphics 212 06 86 CS
DOHMANN, EDGAR; Super Bug II and Super Space 85 06 86 CS
EDITOR/ASSEMBLER module and Super Space 85 06 86 CS
EXPANDING YOUR TI article 181 07 86 CS
EXTENDED BASIC GRAPHICS by Great Lakes 75 05 86 CS
EXTENDED BASIC cartridge 182 07 86 CS
EZ LOADER II program from Quality Software 73 07 86 CS
FAIRS; 99/4A Expo in Los Angeles (CA) 75 03 86 CS
FAIRS; Boston (coming) 212 06 86 CS
FAIRS; Los Angeles Fest West 212 06 86 CS
FAIRS; Los Angeles TI Fest West (CA) 190 04 86 CS
FAIRS; Nashville TN (coming) 212 06 86 CS
FAIRS; New England 99 Fair (MA) 190 04 86 CS
FAIRS; Ontario, Canada (coming) 212 06 86 CS
FAIRS; TI Computer Owners Festival (NJ) 190 04 86 CS
FAIRS; TI Computer Owners Fun Fest - NJ 212 06 86 CS
FAIRS; annual computer exposition 75 05 86 CS
FAIRWARE concept 190 04 86 CS
FAIRWARE; BBS software by Scott Darling 60 04 86 CS
FAIRWARE; C99, program by Clint Pulley 230 06 86 CS
FAIRWARE; Checkbook and Budget Mgt. program 230 06 86 CS
FAIRWARE; Dcopy, disk copier and archiver 214 08 86 CS
FAIRWARE; FAS-tran Check Bk program 230 06 86 CS
FAIRWARE; MS-Adventure Adventure Series 230 06 86 CS
FAIRWARE; Macro Assembler by R.A.Green 203 10 86 CS
FAIRWARE; RLE Graphics by Travis Watford 214 08 86 CS
FAIRWARE; TECHIE BBS software by M.Schmid 60 04 86 CS
FAIRWARE; TI COMM BBS; BY R.Gries/J.Clulow 60 04 86 CS
FAIRWARE; c99 language by Clint Pulley 73 07 86 CS
FAIRWARE; c99 language by Clint Pulley 77 02 86 CS
FAS-TRAN CheckBk program and Spreadsheet 230 06 86 CS
FAST-TERM by Paul Charlton and RLE Graphics 214 08 86 CS
FAST-TERM software; for Super Space or Cart 85 06 86 CS
FILE TYPES; figuring them out; article 75 05 86 CS
FIRST ANNUAL TI FORUM CONTEST; rules, prizes 93 09 86 CS
FORTH BITS FROM HOWIE ROSENBERG; some tips 226 11 86 CS
FORTH FLOATING POINT FIXES by Glen Davis 86 06 86 CS
FORTH LANGUAGE; Auto BSAVE 94 11 86 CS
FORTH LANGUAGE; Bug fix to read null records 93 11 86 CS
FORTH LANGUAGE; Data Transfer Protocol Trans. 86 06 86 CS
FORTH LANGUAGE; Floating Point Fixes 86 06 86 CS
FORTH LANGUAGE; Int'l Forth Information Centr 93 11 86 CS
FORTH LANGUAGE; Inverse Text 94 11 86 CS
FORTH LANGUAGE; Recursive Compiler, listing 75 03 86 CS
FORTH LANGUAGE; Some Suggested Reading 86 06 86 CS
FORTH LANGUAGE; listing, Data Trans. Prtcl. 193 06 86 CS
FORTH LANGUAGE; listing, Floating Point Fix 193 06 86 CS
FORTH LANGUAGE; listing, Flower Power et al 193 06 86 CS
FORTH LANGUAGE; listings, File I/O routines 94 11 86 CS
FORTH LANGUAGE; tips from Howie Rosenberg 226 11 86 CS
FOWLER, RALPH; TIBBS Bulletin Board software 60 04 86 CS
FREEWARE concept 190 04 86 CS
FUTURE for TI-99/4A 79 01 86 CS
Future for TI 77 02 86 CS
GAMES; MS-Adventure Adventure Series 230 06 86 CS
GAMES; Night Mission from Miller's Graphics 79 01 86 CS
GAMES; multi-player on the Compuserve netwk 200 10 86 CS
GENEVE COMPUTER from Myarc, progress on 238 09 86 CS
GENIAL COMPUTERWARE; pub, Genial Traveler 236 09 86 CS

GENIAL TRAVELER; magazine on a disk 236 09 86 CS
GENIE BBS; new head (Mark Sumner) 75 05 86 CS
GPL LANGUAGE and GRAM-Karte 238 09 86 CS
GPL-LINKER SOFTWARE; coming from Ryte Data 93 11 86 CS
GRAM KRACKER Cartridge; Miller's Graphics 59 04 86 CS
GRAM KRACKER; Hardware product of the Year 124 12 86 CS
GRAM-KARTE dumps and stores cartridges 238 09 86 CS
GRAPHING SOFTWARE; Business Graphs 99 75 05 86 CS
GRAPHING SOFTWARE; Extended Basic Graphics 75 05 86 CS
GRAPHING SOFTWARE; Von Graphs 99 75 05 86 CS
GRAPHX PICTURES program and 24 pictures 238 09 86 CS
GREAT LAKES SOFTWARE; Extended Basic Graphics 75 05 86 CS
GREAT LAKES SOFTWARE; Joy Paint 99, mention 214 08 86 CS
GREEN, R.A.; Macro Assembler (Fairware) 203 10 86 CS
GRIES, RON and J. Clulow; TI COMM BBS softw 60 04 86 CS
GRIES, RON; Super Cart kit and software 85 06 86 CS
GTE/TELENET; PC Pursuit BBS service 93 11 86 CS
GTE; PC PURSUIT Bulletin Board service 75 03 86 CS
HARDWARE PRODUCT OF THE YEAR (Gram Kracker) 124 12 86 CS
HODDIE, J.PETER; Pre-Scan It! program 124 12 86 CS
HODDIE, J.PETER; Pre-Scan It! sftwr (Asgard) 93 11 86 CS
HOLCOMB, Randy; reasons for going to Atari 60 04 86 CS
HOW TO BUY A PRINTER; article 79 01 86 CS
INNER LIMITS article by Glen Davis 123 12 86 CS
INNER LIMITS article by Glen Davis (Assembly) 91 10 86 CS
INNER LIMITS article by Glen Davis on Forth 93 11 86 CS
INNER LIMITS; assembly advice; Glen Davis 93 09 86 CS
INTERNATIONAL FORTH INFORMATION CENTER 93 11 86 CS
ISLAND OF KESMAI; multi-player game-Compusrv 201 10 86 CS
JOY PAINT 99 program by Ernest Chandler 236 09 86 CS
JOY PAINT 99 program; mention of 214 08 86 CS
KEYBOARDS; new IBM-type coming from Rave Co. 93 11 86 CS
LIBRARIES, PUBLIC DOMAIN; Dr.Guy Romano 93 11 86 CS
LISTING; Call Key routine in Basic 168 06 86 CS
LISTING; Color Bonanza adapted to c99 124 12 86 CS
LISTING; Color Bonanza in Basic by Ed York 124 12 86 CS
LISTING; Data Transfer Protocol Trans.(4th) 193 06 86 CS
LISTING; Flower Power et al in Forth 193 06 86 CS
LISTING; Forth Floting Point Fixes 193 06 86 CS
LISTING; Forth, Recursive Compiler 75 03 86 CS
LISTING; Sieve of Eratosthenes; assembly lang 91 10 86 CS
LISTING; c99 program tutorial 82 08 86 CS
LISTING; modified Charal Character Set 260 12 86 CS
LISTINGS; Forth screens with File I/O routns 94 11 86 CS
MACRO ASSEMBLER by R.A.Green (Fairware) 203 10 86 CS
MAGAZINES; Genial Traveler, Magazine on disk 236 09 86 CS
MAGAZINES; R/D Computing Newsletter 214 08 86 CS
MAGAZINES; Smart Prgmr to merge w/Super 99 230 06 86 CS
MAGAZINES; Super 99 Monthly, Smart Prgmr 230 06 86 CS
MAIL ORDER; How to check bef sending money 190 04 86 CS
MAX-RLE; Software Product of the Year 124 12 86 CS
MAXIMEM CARTRIDGE saves modules to disk 238 09 86 CS
MCCANN SOFTWARE; Business Graphs 99 75 05 86 CS
MCCANN, MIKE; Business Graphs 99 75 05 86 CS
MECHATRONICS of Germany; GRAM-Karte 238 09 86 CS
MECHATRONICS of Germany; Maxieem cartridge 238 09 86 CS
MECHATRONICS of Germany; new product line 212 06 86 CS
MEGA WARS III multi-player game; Compuserve 200 10 86 CS
MEMORY EXPANSION card or stand alone 182 07 86 CS
MEMORY EXPANSION cards, stand alone; CorComp 214 08 86 CS
MILLER'S GRAPHICS' Gram Kracker 124 12 86 CS
MILLER'S GRAPHICS, Night Mission, game 79 01 86 CS
MILLER'S GRAPHICS; Disksassembler program 212 06 86 CS
MILLER'S GRAPHICS; Gram Kracker cartridge 59 04 86 CS
MILLER'S GRAPHICS; Smart Pgmr merger 230 06 86 CS
MILLER'S GRAPHICS; new product announced 212 06 86 CS
MINI MEMORY cartridge 182 07 86 CS
MITCHELL, RICHARD; Bytemaster, Super 99 Mntl 230 06 86 CS
MODEM; expansion for the TI 182 07 86 CS
MODEMS; Forth Data Transfer Protocol Transl. 86 06 86 CS
MODEMS; Quick Dialer program from Asgard 230 06 86 CS
MODEMS; Use of for accessing BBS's 60 04 86 CS
MODIFIED Charal Character Set; listing 260 12 86 CS
MONTY SCHMID; BBS software, TECHIE (Fairware) 60 04 86 CS
MORRIS, ANGELO; blind user is inspiration 224 11 86 CS
MULTIPLAN cartridge and FAS-Tran 230 06 86 CS
MYARC; Geneve Computer, progress on 238 09 86 CS
MYARC; TI 99/4A hardware support 59 04 86 CS
MYARC; announces computer-on-card for PEB 230 06 86 CS
NAVARONE INDUSTRIES; new Texas address 191 04 86 CS
NEW PROGRAMS FOR THE TI-99/4A ad from Quality 73 07 86 CS
NIGHT MISSION game from Miller's Graphics 79 01 86 CS
OAK TREE SYSTEMS; Smash utility program 124 12 86 CS
PC PURSUIT BBS 75 03 86 CS
PC PURSUIT; BBS service from GTE/Telenet 93 11 86 CS
PCKEYS utility software from Technigraphics 77 02 86 CS
PETERSON, JIM; Nuts and Bolts 2, XB software 77 02 86 CS
PHOENIX, the computer that never made it 59 04 86 CS
PICTURE; RLE graphics 81 08 86 CS
PIRACY, Software 226 11 86 CS
PRE-SCAN IT! program by J.Peter Hoddie 124 12 86 CS
PRE-SCAN IT! software by J.Peter Hoddie 93 11 86 CS
PRINT SHOP TYPE PROGRAM; Joy Paint 99 236 09 86 CS
PROGRAMMING LANGUAGES 59 04 86 CS
PROTECTION for disk software 224 11 86 CS
PULLEY, CLINT; author of c99 77 02 86 CS
PULLEY, CLINT; author of c99 language 124 12 86 CS
PULLEY, CLINT; author of c99, freeware 230 06 86 CS
PULLEY, CLINT; c99 language, Fairware 73 07 86 CS
QS-RAMDISK program from Quality 99 59 04 86 CS
QUALITY 99 SOFTWARE; Banner Maker 59 04 86 CS
QUALITY 99 SOFTWARE; Disk Manager IV 59 04 86 CS
QUALITY 99 SOFTWARE; EZ-Loader and Chart Mkr2 73 07 86 CS
QUALITY 99 SOFTWARE; QS-Ramdisk 59 04 86 CS
QUALITY 99 SOFTWARE; Screen Dump II 59 04 86 CS
QUALITY 99 SOFTWARE; Softkeys 59 04 86 CS
QUICK DIALER program by Mark Larry (Asgard) 230 06 86 CS
R/D COMPUTING NEWSLETTER; technical mag 214 08 86 CS
R/D NEWSLETTER; Change clock crystal - speed 201 10 86 CS
RAG SOFTWARE; Macro Assembler (Fairware) 203 10 86 CS
RAMDISK; expansion for the TI 182 07 86 CS
RANDY'S RAVINGS; last column 60 04 86 CS
RAVE 99 COMPANY; new IBM-type keyboard 93 11 86 CS
RECIPE WRITER program by Warren Agee 230 06 86 CS
RLE GRAPHICS program; Fairware 214 08 86 CS
RLE by T.Watford; Software Product of Year 124 12 86 CS
ROMANO, DR.GUY-STEFFAN; (Amnion Help-line) 93 11 86 CS
ROMER, DAVID; Super Cart kit and software 85 06 86 CS
ROSENBERG, HOWIE; Forth language tips 226 11 86 CS
RS232 INTERFACE; expansion for the TI 182 07 86 CS
RYAN, BRUCE; R/D Newsltr; clock crystal tip 201 10 86 CS
RYTE DATA and Mechatronics products 230 06 86 CS
RYTE DATA; R/D Newsletter; clock crystal tip 201 10 86 CS
RYTE DATA; new assembly-disassembly book 93 11 86 CS
RYTE DATA; pub. R/D Computing Newsletter 214 08 86 CS
RYTE/DATA; GRAM-Karte and Maxieem cartridge 238 09 86 CS
SCHEMATICS for hardware modification, offer 214 08 86 CS
SCHMIDT, MONTY; new assembly-disassembly book 93 11 86 CS
SCREEN DUMP II from Quality 99 59 04 86 CS
SECTOR COPIERS and illegal copying 226 11 86 CS
SHAREWARE/FREEWARE concept 190 04 86 CS
SIEVE OF ERATOSTHENES; Assembly lang listing 91 10 86 CS
SMART PROGRAMMER merger with Super 99 230 06 86 CS
SMASH program by Oak Tree Systems 124 12 86 CS
SOFTKEYS program from Quality 99 59 04 86 CS
SOFTWARE PRODUCER OF THE YEAR (Asgard) 124 12 86 CS
SOFTWARE PRODUCT OF THE YEAR (Max-RLE) 124 12 86 CS
SOFTWARE PROTECTION discussion on piracy 224 11 86 CS
SOFTWARE; selling yours 190 04 86 CS
SOME SUGGESTED (FORTH) READING by Glen Davis 86 06 86 CS
SOURCE BBS, Texnet 79 01 86 CS
SOURCE HOSTS NEW TI-SIG; article 123 12 86 CS
SOURCE TELECOMPUTING CORPORATION, article 123 12 86 CS
SPEECH and the TI 224 11 86 CS
SPREADSHEETS; FAS-Tran program (Fairware) 230 06 86 CS
SUMMER, MARK; new TI Roundtable presider 75 05 86 CS
SUPER CART module compared to Super Space 85 06 86 CS
SUPER SPACE cartridge 85 06 86 CS
SYSOP; How to become the head of a BBS 59 04 86 CS
TAYLOR, JOHN; Checkbook and Budget Mgt. pgm. 230 06 86 CS
TAYLOR, JOHN; MS-Adventure Adventure Series 230 06 86 CS
TECHIE BBS software by Monty Schmid (Fairware) 60 04 86 CS
TECHNIGRAPHICS; software, PCKeys Utility 77 02 86 CS
TEXNET, Source BBS 79 01 86 CS
TEXNET; replaced by TI-SIG on The Source 123 12 86 CS
TEXT TO SPEECH program by TI 224 11 86 CS
TI COMM; BBS software by R.Gries/J.Clulow 60 04 86 CS
TI COMPUTER OWNERS FESTIVAL (TICOFF) (NJ) 190 04 86 CS
TI FORUM beginning w/ Albright, Zitrain 59 04 86 CS
TI FORUM, CompuServe BBS 79 01 86 CS

TI INFORMATION NETWORK, Delphi BBS 79 01 86 CS
TI WRITER Tips AND Tricks guide, review 124 12 86 CS
TI WRITER; character set; article and listng 123 12 86 CS
TIBBS Bulletin Board Software 60 04 86 CS
TIGERCUB SOFTWARE; Nuts and Bolts 2 77 02 86 CS
TRACK COPIERS and illegal copying 226 11 86 CS
TRAVER, BARRY; ed-pub of Genial Traveler 236 09 86 CS
TRITON Catalog 124 12 86 CS
TUTORIAL; c99 language 73 07 86 CS
TUTORIALS; c99 124 12 86 CS
TYMNET; Delphi BBS 124 12 86 CS
USER'S GROUPS; Boston Computer Society (MA) 124 12 86 CS
USER'S GROUPS; Central Arkansas 4th UG (AR) 75 03 86 CS
USER'S GROUPS; Int'l Forth Information Center 93 11 86 CS
USER'S GROUPS; Los Angeles 99'ers (CA) 75 03 86 CS
USER'S GROUPS; Mid-South UG (TN) 214 08 86 CS
USER'S GROUPS; Mid-South UG (TN) 203 10 86 CS
USER'S GROUPS; Milwaukee Area 99/4A UG (WI) 93 11 86 CS
USER'S GROUPS; Music City UG (TN) 75 05 86 CS
USER'S GROUPS; New Horizons (OH) 60 04 86 CS
USING CALL KEY article by Glen Davis 85 06 86 CS
UTILITEE SOFTWARE; Von Graphs 99 75 05 86 CS
VON GRAPHS 99 from Utilitee Software 75 05 86 CS
WATFORD, TRAVIS; Max-RLE Graphics 124 12 86 CS
WATFORD, TRAVIS; RLE Graphics 214 08 86 CS
WEATHER FORCASTER by Gary Cox (Fairware) 203 10 86 CS



Triple your 99/4A storage capabilities with the CorComp 9900 Disk Controller.

The CORCOMP Double/Sided Double Density Disk Controller lets into any TI Peripheral Expansion Box.

Adding disk drive storage capabilities to your 99/4A with the CORCOMP Disk Controller will allow you to:

- Control up to 4 disk drives
- Mix drive types — Single-sided through Double-sided Double-density
- Expand your disk storage from 360K with one slimline DS/DD disk drive to 1.4 Megabyte with four DS/DD drives.
- Comes with the CORCOMP Disk Manager on 5¼" floppy diskette. It provides 8 new commands and programming statements not found in the TI Disk Manager module. It will allow you to run and load assembly language programs and TI FORTH without using the Editor/Assembler module.

Part #3027 $149.95

6 Reasons to buy GRAND-RAM (Aka SUPER DISK)

1. Data integrity! **GRAND-RAM** features battery backed memory, so you can rest assured data stored in **GRAND-RAM** will be safe.
2. Compatibility! **GRAND-RAM** is compatible with all cards and software we have tried so far. Included in this list are all other RAM disks, the hard drive system, all three floppy disk controllers (CorComp, Myarc, and TI), the Geneve (tm Myarc), Writer*EASE*, and Multiplan (tm Microsoft).
3. Flexibility! **GRAND-RAM** is more than a RAM disk because it comes with a print spooler, and the ability to function as up to four drives. Add the optional *Real Time Clock* to have instant access to the current time and date.
4. Expandability! Add more **GRAND-RAM** cards to your system for up to two Megabytes of instant access to your data!
5. Affordability! The full blown **GRAND-RAM** is a superb value as well! On a budget? Get the 64K version, then add memory as you can afford it.
6. Support! If you ever have a question, problem, or suggestion, call our toll free number anywhere in the United States, or our business number inside California. One of our staff will be happy to help you!

64K...$134.95 128K...$149.95 256K...$179.95 512K...$234.95
Real Time Clock...$29.95

REVISED MANUAL!

WriterEASE

WriterEASE is the first software program to be introduced by CorComp. **WriterEASE**, a word processing program, has been developed by Galen A. Read to give 99/4A users an EASY way to process letters, documents, newsletters, business and school presentations.
WriterEASE is a disk based program which requires 32K memory expansion and a disk drive.
The Dictionary can be put onto a RAM-disk for lightning fast access.

- Every command is simple, logical and EASY to remember. As an example, Ctrl-D will display the directory on the screen without disturbing your document.
- Finding text is up to ten times faster than other word processors
- Loading and saving files to disk is up to two times faster.
- Spelling checker can be accessed while you are typing your document.
- Position the cursor under any letter of the word you wish to check and press Ctrl-C.

Special price.....$39.95
Geneve version.....$59.95

US 1 800 255 2985
CA 1 707 585 3922

Call to place an order or for your free catalog!

BBS 1 707 586 3321

We stand behind what we sell!

Send Check or Money Order to:
Innovative Programming
PO Box 2737, Rohnert Park, CA 94928

Add shipping and handling.
CA residents add 6% sales tax.

NEW SHIPPING CHARGES	
Items less than $20	$3.00
$ 20 to $ 39.99	$4.00
$ 40 to $ 79.95	$5.00
$ 80 to $169.99	$6.00
$170 to $299.99	$7.00
$300 and above	$8.00

Send company check or money order for immediate shipment. Personal checks require up to four weeks to clear. COD orders add $3.50.

HIGH RES GRAPHICS AND THE 99/4A

by Anne Dhein

Our Heritage

Introduction

There was a time when TI-99/4A owners felt abandoned. In place of the promising machine that had been purchased with such high hopes they had been left with an orphan. These users lived with the knowledge that they had a superb graphics system at their finger-tips, but unless they were good programmers, no way to conveniently access the graphics. Commercial graphics software was just not available. Now, a few short years later things have changed drastically. We are left on the other side of the fence wondering in amazement how we are ever going to figure out which of all that great-sounding graphics software is really worth investing in. What, actually, can be expected of a drawing program? Is there one perfect program out there, waiting for me to discover it? Or will I need several programs to meet all my needs? These are the topics that will be explored in this series. Part one takes a look at what graphics programs do, and what's on the market. Then a definition of a good, basic drawing program can be given.

Part two will compare the main programs. Parts three and beyond will examine support and companion packages, including the newer programs which allow text and graphics to be intermingled. Finally, the various drawing packages and companions will be analyzed to see how they can be used together. With this knowledge you should be able to select the packages that best suit your needs, whether you have a particular application in mind or are just looking for a good general drawing program for the personal enrichment of yourself and your family.

Your Own Electronic Billboard

For graphics purposes, the 99/4A screen is simply a grid of blocks. Imagine a piece of graph paper and mentally mark off 32 little squares across the top row. Right underneath mark a second row of 32 blocks; then a third, and a fourth, until you have 24 rows, each with 32 squares marked off. Now you have a nice facimile of your TV or monitor screen as it is partitioned off in the standard graphics mode that we are most used to seeing. If you were to count all those marked-off squares, you would find you had 768 individual blocks (32X24=768). Each block is just the right size to hold one character that can be typed in from the keyboard. These are the normal, everyday letters, numbers and punctuation that you use all the time, but in computer terminology they are given a special name: "ASCII" characters. A programmer can effectively "erase" these ASCII characters and define a new pattern of his own choosing. This is done in Basic and Extended Basic with the Call Character subroutines. The programmer assigns each character block two colors (a foreground and a background) from the 16 colors that the TI computer has available.

In Extended Basic built-in sprites may be used as well. Sprites are character-sized graphics that have the capability of moving around the

screen independently of the background. They can be defined to any shape, then colored and magnified. Such things as location, speed and distance can be easily manipulated. (They can also be present in high resolution graphics, but in this case can no longer move.)

An assembly language programer also has access to the multicolor mode. Here, the display is divided into 48 rows, each containing 64 "boxes", or blocks. The blocks are not able to be defined in the manner of the larger, pattern mode blocks, but each of the 3072 blocks can be a separate color, chosen from any of the 16 colors available. Sprites can also be used in multicolor mode, but not text. The multicolor mode cannot be used in Basic except with assembly language software that uses a special module such as the Editor/Assembler, Mini Memory or Extended Basic.

Text mode is familiar to us through the use of such cartridges as TI Writer and Multiplan. Each of these programs employs a display that is 24 lines long, but the character blocks have been increased to 40 across which gives us 960 screen positions instead of 768. Although sprites cannot be used and only two colors (foreground and background) are allowed at one time, the text mode can be used for graphics. Still, text mode is most suited for just that - text.

In all three of these modes - pattern, text and multicolor - each block is composed of a number of dots. In the multicolor mode each block is 16 dots; 4 dots high and 4 dots wide. In text mode the character blocks are 8 dots high by 6 dots wide - 48 dots in each character. Pattern mode, with only 32 blocks across the screen, consists of 64 dots for each block - 8 across and 8 high. This means that there can be 64 times 768 dots on the screen at one time in pattern mode - 49,152 in all. Text mode has 46,080 of these dots (48 X 960=46,080), and either way you look at it, that's a lot of dots! In computer jargon these dots are called "pixels" (for PICture ELement) and are the smallest individual units on the screen. It is the 49,152 pixels from pattern mode that we are going to focus on, because in the high resolution (or "bit map") mode, each of these 49,152 pixels is able to be turned on and off individually. The whole idea of a drawing program is to let you do this quickly and easily.

With the high resolution in the bit map mode, the screen is considered to be a grid 192 pixels high and 256 pixels wide. That's still only 32 character blocks across and 24 blocks high, but now each pixel can be turned on or off (that is, drawn or erased) independently of any other pixel. For color the computer divides each pixel-row into 32 groups of 8 pixels. The computer can assign a background color and a foreground color to each 8-pixel group. This is what our electronic drawing board consists of in all the popular art packages we have today, and it is on these drawing programs that our interest will now focus.

In the Beginning...
When Texas Instruments first unveiled the TI-99/4 computer in June, 1979, there were only a handful of applications of any kind available - and all were in module format. One of these was Video Graphs which was billed as "an easy-to-use Graphics System which lets you draw in 14 colors on the screen with a whole new electronic paintbrush concept". This drawing can be done in high resolution with a single pixel line width; or in the multicolor mode by placing 16-pixel colored dots anywhere on the screen. The user could also command the computer to

create graphic images by using the Building Blocks section. Here, many graphic characters of various geometric shapes are located along the bottom of the screen. Select one, pick all or part of it up with the keyboard or joystick and place it where you want it in your picture.

Video Graph's demonstrations were impressive when the module was new, and although the bright, mosaic-like patterns may seem archaic by today's standards, the module actually contains the rudiments of the more sophisticated graphics systems we now have. High resolution drawing was there, as was the computer's less familiar multicolor mode. Even the concept of icons which is so popular in today's graphics software made its appearance here, in the Building Block section. This module was intended purely for personal enrichment, not as a tool. There is no way to use the graphics you create in your own programs, and no way to print them out. In fact, the only way drawings can be saved at all is on tape.

If you have Video Graphs you have probably seen for yourself the fascination it holds for children, even small ones. Children love to draw and this module provides a medium for creative expression unhampered by long lists of functions that must be remembered. Indeed, anyone with an unexpanded system will find that it can still provide hours of enjoyment and satisfaction.

No other drawing programs were ever released by Texas Instruments, but users themselves soon began circulating a number of very good programs made available through local user's groups and through the International Users' Group in Bethany, Oklahoma; or Amnion Helpline in Bakersfield, California. These first user-written programs were in Basic; mainly graphics screens but also a couple of entertaining drawing programs such as Color Crayon which let you draw with colorful character-size blocks using the keyboard or a joystick. There were also utilities for designing graphics characters to be used in Basic (and later Extended Basic) programs. There was even a program or two for printing out banners if you were lucky enough to have a printer. When the Editor/Assembler package was finally released, program quality rose. Like 3rd party software, these user written programs have tended to become more and more sophisticated with time, and today some very good graphics programs are available for only a fraction of their worth.

The first high resolution graphics program to be put out by a 3rd party that I know of was introduced by Norton Software of Ontario, Canada. It was called, appropriately enough, Graphics Package. It was originally written in Basic, but that was soon dropped in favor of the faster, more easily used new Extended Basic version. With it, anything could be drawn anywhere on the screen in 3 levels of resolution, corresponding to the standard (or pattern) mode of 768 character blocks, multicolor mode, and high resolution, which has 49,152 accessible pixels. Circles, parabolas, boxes and lines could be drawn automatically. All the information making up the graphics could be saved on tape or disk to be incorporated into you own program. However, it wasn't easy. This program was not intended as entertainment but as a serious tool for Extended Basic programmers. For a long time, the Graphics Package was about the only way for the average programmer to access high resolution graphics. The package was disappointing to some, who would have liked to use it for drawing pleasure. The program was also excruciatingly slow, even in Extended Basic. But, it did everything it promised and is still the best graphics tool available for anyone with an unexpanded

system.

In 1982, with the advent of the Editor/Assembler package, a new kind of program hit the market. Draw-A-Bit by Data Force of Illinois was an assembly language program which booted through Extended Basic. It allowed the user 100% keyboard access to the bit-map graphics mode. Using either the keyboard arrow keys or a joystick the user could draw on the screen in any of the colors with a line that was only one pixel wide. Colorful circles, lines and rays could be drawn automatically. Shapes could be filled with color with the press of a function key. Pictures could be added to by means of "palettes" created by the user and stored on disk. Using the Draw-A-Bit environment, advanced users could create and display complex plots in Extended Basic. Drawings too tedious to be drawn by hand could be coded in Draw-A-Bit format and displayed on the screen. Pictures could be saved on disk and reentered into the program, and they could also be transfered to Extended Basic programs. It is not only an extremely powerful tool for the more advanced programmer, but can provide hours and hours of entertainment to anyone who likes to draw and is willing to learn how to use the program's more than 80 functions. One entertaining and unique characteristic of this program is the ability to redraw a picture right before your eyes. The demo on the disk is positively addictive, as you watch each picture being rapidly built, line by line, color by color. I know of no other program that does this.

The original Draw-A-Bit was strictly for screen graphics but a companion disk, Print-A-Bit, was introduced to provide printer support. Data Force also released a Draw-A-Bit II but I never saw the second version. Print-A-Bit works with both versions.

Draw-A-Bit filled a real need for a graphics application which users could enjoy and yet get some use out of too. It is now recognized as the grandaddy of a new generation of graphics programs. Unfortunately, this excellent program never got the popularity it deserved. Perhaps it was ahead of its time - when it came out the vast majority of users still didn't have disk systems. At first glance the manual looks technical and hard to read; actually, the program is easy enough to begin using for pleasure almost immediately. Just don't try to learn all 80 functions at once!

One of the first commercial screen dump programs was introduced in 1983 by Extended Software. It was available on either tape or disk. The screen dump routine could be added to your Extended Basic program at the point where you wanted the screen to be saved. You would get a modest-sized 4 1/4 inches wide X 2 5/8 inches high duplicate of the screen, except that it wouldn't print sprites. This is still an excellent choice of software for those with unexpanded systems.

Late in 1983 TI made their now-famous anouncement that the 99/4A was being discontinued. Nevertheless, 1984 was a good year for 3rd party suppliers, and the graphics void began to fill. Some good, and some not-so-good programs were introduced that year; many of them improvements of older programs like Video Graphs, Draw-A-Bit and Screen Dump. Some were unique. Personal Peripherals came out with Super Sketch which can be likened to a vastly improved Video Graphs. Along with the cartridge came a tablet-like controller pad, complete with stylus. As the stylus is moved across the pad, an image is created on your computer video screen. Four push buttons at the top of the

controller pad control the color selection and graphic functions of the stylus. Graphics may be drawn free-hand or traced from drawings clipped to the pad. Drawing with Super Sketch can be so simple that with a little instruction a six year old can use it. On the other hand, using the advanced features provided, an adult can also have hours of creative fun. Graphics are saved on tape, as Super Sketch is made to be used on an unexpanded system.

A companion disk, called Sketchmate, was introduced by Amerisoft International soon after Super Sketch came out. This software allowed the user to save Graphics to disk as well as tape, and to print them out on an Epson or compatible printer. A unique feature of the printout is that each color is represented by a different shading, which gives the printout a very nice look. Navarone's Cartridge Expander (better known as the Widget) is a requirement of this program. The Super Sketch Cartridge is put into the cartridge expander with Extended Basic right beside it. When Sketchmate is loaded (via Extended Basic or Editor Assembler) you are then asked to switch to the Super Sketch cartridge. When you do, you are instantly ready to go, with never a sign of Sketchmate until you want to save or print a picture! Unfortunately, if you don't already have this fine software your chances of getting it are slim. Neither it nor Super Sketch are readily available any more.

Besides Sketchmate, Amerisoft International introduced several other graphics packages during 1984, most of which are now hard to find. Graphics Grabber is much like the earlier Screen Dump Utility from Extended Software except that this newer program is in assembly language and much faster. It can dump a screen either horizontally or vertically onto the paper, and the printout is larger. Master Painter 99 is a very useable drawing and painting program, but like Draw A Bit requires the remembering of quite a number of function key strokes in order to use. Like Draw A Bit, it also has a hard-to-read manual. A screen dump is on the disk.

3D World had a new twist. It allowed one to make complex, colorful, 3 dimensional designs that could be rotated, inverted or made partially invisible. Designs could be saved to disk or printed out. Programming experience is not necessary in order to use the program. Access to the image file for use in a Basic program is explained in the manual. Be prepared for a learning experience when you use this program. It's complicated, but very interesting if you have the time to spend.

Expanded Graphics Basic lets you add 30 new commands to either Basic or Extended Basic. After XGB is loaded into the computer the new commands can be accessed by a series of CALL LINKS right along with the regular programming language. Although not a drawing program per say, it does allow the programmer fairly easy access to the bit map mode and to screen drawing. The commands include graphing and plotting routines, and a screen dump. Like 3D World it is a fascinating educational experience to use this program if you have time to spend. It is an ambitious program, with nearly all available memory used up. If you aren't careful you may run into errors due to memory full, and lose your data.

Quality Software's Draw 'N Plot also lets you add a number of new graphics commands to your Extended Basic programs by means of CALL LINKS. But besides the eleven callable subroutines, Draw 'N Plot includes a drawing editor which allows drawing and erasing a pixel width

line. Circles, squares, and lines between two points may be drawn automatically. Shapes may be filled in solid on command. Use of color is limited to two at a time - forground and background. Pictures may be saved to disk or printed. Although this package does not support some of the nicer frills such as magnification, rotation, etc., it is the best program yet for adding graphics to XB programs. However, like Expanded Basic Graphics, be warned that memory is a problem. You can crash the system if your program is too large!

A companion disk, Chart Maker, originally worked with Draw 'N Plot to create all kinds of charts and graphs. The newer version of Chart Maker only requires Extended Basic. Quality 99 Software has done an excellent job of keeping their programs revised and updated since they began putting them out in 1983. Their graphics programs also include a Banner Maker and a very fast Screen Dump which will even print module screens if an interrupt switch is installed on the computer.

With so much graphics software coming out so fast for awhile, it was hardly suprising that some of it would be obsolete almost before it hit the market. Navarone's Paint 'N Print cartridge was originally meant for the unexpanded system. Apparently not enough users were interested in a software package which only did about half of what competing programs could do. In an effort to save Paint 'N Print from complete obscurity, Navarone released a companion disk which greatly expanded Paint 'N Print's capabilities. But by that time there were many graphics packages on the market competing for the customer dollar. One of them was Graphx. Another was TI Artist, which, along with Graphx, would radically affect the 994/A graphics software market.

Graphx - The Giant of the Industry

Graphx got its start in Australia, and was such a good paint program that before anybody realized what was happening, the era of the TI 99/4A Paint Program was in full swing. With Graphx, freehand drawing and erasing in the bitmap mode are controlled by the joystick. It offers speed control and full color capability. Circles, boxes and lines can be drawn automatically. Shapes can be filled with built-in patterns as well as color. Portions of the picture can be copied and/or moved to another location in the picture, or even to an entirely different picture by means of the "clipboard" feature. Text may be incorporated into the drawing. A "zoom" mode lets the user view and edit a small portion of the picture that has been magnified to four times its original size. The resident screen dump prints to an Epson or compatible printer in four different formats. A unique feature of Graphx is the aforementioned clipboard which lets you store and retrieve parts of pictures while you are working on them. Picture parts or special alphabets (fonts) can also be saved to disk to be incorporated into drawings whenever you want them. With the clipboard, you can also try your hand at computer animation. This program's not only easy to use but has an excellent tutorial/reference manual that comes wih it. The manual even explains how to display a Graphx picture file in an assembly language program.

TI Artist, like Graphx, was a sleeper at first. But it quietly ran down competition until, today, it is the frontrunner of all graphics programs. Like Graphx, TI Artist can be used almost without ever referring to the manual. Drawing and erasing are done freehand in full color with various brush widths and with most of the frills that Graphx supplies plus some of its own. The screen dump is the best of any

program around, and will work with practically any printer. Another thing that makes this program a winner is the ability to take files from other popular paint programs and convert them to be used with TI Artist. But the one feature that makes this program really outstanding is the ability to save any part of a screen as an "instance". This instance is saved in a display/variable 80 file format that can be looked at by TI Writer. When converted, the numbers in this file can be used for Call Character routines in Basic, or even for transliterate codes that will dump graphics into TI Writer files! These features make TI Artist the most versatile program on the graphics market, and have spawned a new type of software: Artist support packages.

As support packages pour out for Graphx and TI Artist, these two have become more and more established as the best paint programs for the 99/4A, and fewer paint programs are being introduced. Bitmac, which made its appearance in 1985 was another good program doomed to obscurity. Authored by David Vaughan, Bitmac was simultaneously introduced by Data Biotics and Vaughan Software, both of whom claimed copyrights. Despite its cloudy beginnings it is a nice program with many of the features of Graphx and TI Artist as well as a couple new ones. This program is operated by icons which are pointed at with the Joystick. To select, the fire button is pressed. Besides the standard features you would expect a good drawing program to have, this one can reduce or enlarge your drawing for you - something neither Graphx or TI Artist can do at this point. A screen dump to Epson compatible printers and a Slide Show feature are also contained right within the program. Where Graphx has its Clipboard feature and TI Artist has its Instance file, Bitmac has its Boolean input. This option allows the user to overlay current screen graphics with graphics that are stored on a disk. For an advanced or specialized user the program also has an interesting coprocess feature which allows the use of a second computer, not necessarily a TI, to calculate plots for Bitmac. All you need for the second computer is an RS232 and the proper cable to interface it to the 99/4A's RS232/2 port. With this setup, very elaborate and beautiful graphics can be created on the 99/4A while the second computer manipulates data for business graphs, maps, satellites or a host of other things.

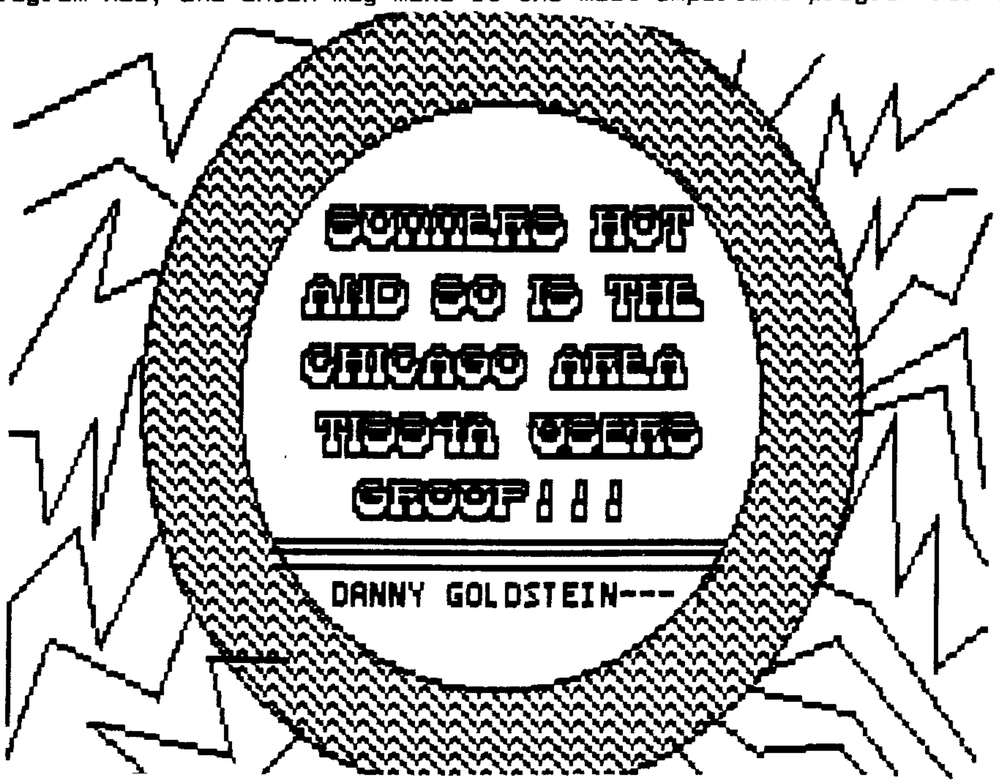
Because of their unique differences, Graphx and TI Artist have been able to flourish side by side, complimenting rather than competing with each other. As yet no other program has come close to replacing either of them, but there may be a contender in the newest paint program. Joy Paint, from Great Lakes Software has some impressive new features of its own. Like TI Artist and Graphx, it is a full-fledged paint program, with one exception: it has no color capability other than a choice of screen background color and black or white for the pencil. The lack of color is not necessarily a disadvantage - you may never use color anyway if your main objective is to dump the graphics to a printer. Painting here refers to filling in with patterns, and Joypaint has a large selection of patterns with which to paint. With the companion disk, Joypaint's Pal, you can even create and save you own patterns.

Joypaint is fully Joystick controlled. The drawing board features are accessed by pointing your drawing tool at the function you wish to use and pressing the fire button. Parts of drawings can be moved, copied and even enlarged, but only with 10,000 pixels at a time. Since there are somewhat under 50,000 pixels, that's just over 1/5 of the screen area. Joypaint employs a windowing technique that allows 92% more

drawing space than just the normal screen. Joypaint's Pal allows files from other programs such as Graphx and TI Artist to be converted to the Joypaint format, and back again, so compatibility is carried on. This easy-to-use program is truly impressive! Whether or not it will catch up to Graphx and TI Artist in popularity may depend more on what kinds of companion disks become available for it than anything else.

Now a better definition of a drawing package can be given. As seen here, it is a program, or group of programs, that will allow users of the 99/4A to create high resolution graphics on the monitor or TV screen. The graphics should be able to be saved and later reloaded, edited, and, in most cases, printed to a dot-matrix printer. High resolution means that each pixel can be placed anywhere on the screen individually and removed (erased) as desired. We have seen that the programs discussed here can do this and much more besides.

The next thing to consider is, how the program is to be used. The program you buy for your own use should be a program which will best do the things you want and need a paint program to do. There are three distinct ways in which a drawing package can be of value: as a utility for adding graphics to your own programs, as a tool for designing slide presentations and printed material for business and home purposes, and last but not least, as personal enrichment. Using a drawing program in this manner can be rewarding and satisfying as well as simply entertaining. Each of the packages focuses just a little differently on these three aspects, and this is something that will be explored further in the next issue. Part 2 will set up a comparison chart that will let you see at a glance just what each of the 10 main drawing packages for the 99/4A can or cannot do, and how each can best be used. Following the chart, each function will be described in detail. As you go down the list you will see that each program has some features that no other program has, and which may make it the most important program for YOU.



Converting GRAPHX to TI-Artist ---------- ------ -- ---------

I recently read an article in the Hoosier User's Group's excellent user group newsletter on converting GRAPHX to TI-Artist with interest. I too had faced this dilemma some time back in trying to transfer our popular GRAPHX Companion series of products over to TI-Artist (a project which regretably still has never been completed due to time limitations and a rather low priority). In any case, I thought the procedure we worked out may be of interest as well.

After playing with both programs for a while, we hit upon the solution offered by Mr. Robert Coffey. As a matter of fact, on our now discontinued Artist Companion disk there is a font that was converted over in just such a manner. It was so time consuming that we soon gave up.

The matter stayed dropped until 9 months or so ago when we were preparing Font Writer for release. I asked Peter Hoddie, the author, if he knew of a way to convert files over, and he said that Font Writer could be used.

Later that week, I sat down, and 4 hours later I had my first font. I chose a very elegant Times Roman, with a complete upper and lower case alphabet, from GRAPHX Companion IV (which was then in the editing phase) for the experiment.

The process is rather simple, actually.

Step one involves getting the fonts to TI-Artist format. If they are stored in a clipboard, as our GRAPHX Companion series fonts are, this involves first pasting them onto a screen (leaving plenty of room between characters, and then saving that screen to disk. As mentioned in Mr. Coffey's article, it is a very good idea to use an empty disk for this.

Next, enter TI-Artist and select the conversions section. Convert the screen from GRAPHX to TI-Artist format (load it in as a GRAPHX screen and save it under TI-Artist).

Next, enter the TI-Artist section from the menu, and select disk options. Load the screen into memory. Leave TI-Artist and go to the Enhancements option. The screen you loaded in TI-Artist will be in memory. Next, enter the Slides menu and select the Save Instance option. The filename you give should be the ASCII character that the picture you are saving represents (IE, if the picture is of an "A" the filename should be A). Next, the screen will appear. Move the cursor to the upper left corner of the character picture you are saving, press the fire button, and move it to the lower right side of the picture, boxing in the character. Press the fire button again and the picture will be saved to disk. Do this over and over until the whole font is saved as individual instances.

When you are done, exit TI-Artist and load your copy of our Font Writer program. Enter the Font Editor option.

When that portion of the package is loaded, go to the menu options, and select the option for opening a font for output. Do NOT select the Append font option. Next, enter the Instances selection from the same menu, and load in the first character (A or whatever). After it loads, you will be dropped to the graphic window.

At this point, it is a good idea if you establish a "baseline" first. The baseline is the bottom line that you will use (not physical) for placing the characters. Characters with descenders (which are the hardest to center), can be easily line up if you adjust them according to that line (remember such characters make look odd, what with all that empty space above them, but that is the way they should look - TI-Artist and Font Writer look at a font from the upper left hand corner).

Using the Move Picture keys of the editor, you can easily move the picture left, right, up and down to center it on that imaginary line (use the block boundary markers to avoid confusion). After the picture of the character is centered, enter the menus again, and again select the font options. Then select the option to save a picture in a font. The Editor will ask you what ASCII character it represents, and then a white cursor will appear on a screen showing the picture. Position this cursor, with the arrow keys, on the lower right corner and press Enter. The program will automatically save it to disk in the font file you specified as the ASCII character you specified. Do this over and over until all your Instances are converted to a font.

The advantages of this system over the one mentioned by Mr. Coffey (which, while still a good system and not requiring Font Writer) is that it is much faster, and you can center the characters in the font a lot easier since Font Writer's editor has tools for it.

Converting regular clipart from GRAPHX to TI-Artist, of course, is a much simpler procedure since all you really have to do is paste it on a screen, convert the screen to TI-Artist, and save each individual picture as an Instance or Slide.

The reverse process, converting TI-Artist to GRAPHX, is very simple. All you have to do is get whatever you are converting onto a screen, save it to disk, convert the screen to GRAPHX (again using TI-Artist's conversions utility) and then paste it into a clipboard from a GRAPHX screen.

Regarding the legality of converting art from GRAPHX to TI-Artist; I'm not sure what the policy of other manufacturers is, but ours is that once you buy the stuff, it's yours. You can convert it to any format you like. However, remember that the works in our GRAPHX Companions and Artist Instances series ARE copyrighted (they are in fact the product of literally thousands of hours of work - a single font may take up to 10 hours to draw with GRAPHX!), and you can't give them out to anyone else. You can convert them for your use, but no one elses.

Font Writer is also copyrighted to J. Peter Hoddie and is manufactured and distributed by Asgard Software. The use of it as described here is only one of the many functions of the product.

Copyright 1987 - Chris Bobbitt
May be reproduced freely if unaltered
All Rights Reserved

HARDWARE MANUAL
FOR THE
TI 99/4A

DESCRIBES:

-Console Design
-Custom Chip Operation
-TMS 9900 H/W Organization
-TMS 9900 Instruction Set
- Interfacing Pitfalls
-Console Schematics
-PEB Card Descriptions
-GROM Simulator Design
-Extended Basic Module
description & schematics

WEEKEND HARDWARE SEMINAR
£
VOLUME RATES
(INFORMATION AVAILABLE ON REQUEST)

SEND $19.95 CHECK OR MONEY ORDER
(CANADA & FOREIGN SEND $23.00 U.S. FUNDS .....)
THE BUNYARD GROUP
PO Box 53171, Lubbock, TX 79453

FULL DUPLEX

Irwin Goldstein

Well, summer is here and its time to do your thing in the great outdoors. With summer comes vacations and trips to the beach and much less time sitting in front of th a hot computer typing away. For the past two and a half years, I have noticed that BBS useage is very seasonal. Many of you who are sysops will probably agree with me.

During the summer months useage will slack off. This is not a bad happening because it gives sysops a chance to rehab the old BBS into a modern system. Work is being done to put in a better assembly language program for operating the board. When this system is installed, you will notice many improvements to the speed and convenience of the BBS.

One major advantage with going to the new assembly is the ability to upload programs larger than 100 sectors. In the past when programs were less sophisticated than today, we didn't need that ability. But now, with many programs being archived into one large file, this ability becomes a necessity.

During the middle of July, I took my family for an eight day vacation to Orlando Fla. We left for the airport Friday morning at 6:30 AM. The evening before we left, the power went out in the neighborhood. A strong storm went thru and apparently knocked down quite a few power lines.

At the time of our departure on Friday, power was still not restored. Therefore, many of you may have noticed that the system was down until my return one week later. For those of you who fear that we gave up on the Goup's BBS, don't worry, we are still in business and stronger than ever with over 600 registered users.

Our upload section has been very active over the past couple of months. We recieve many very good quality programs of all types donated to our group. These programs are available free of charge to all passworded members of the BBS. If you use the Board, but do not yet have a password, read the "H" section of the main menu to learn how to obtain your lifetime password.

If you receive a password when joining but it does not work for you, the leave me a private message giving me your board member number and assigned passwork. I will then investigate the problem.

---------- USERS GROUP BBS ----------

PHONE NUMBER
312-966-2342

EDITOR'S NOTE - Texincia sends a big kiss to all. Unfortunately her article was swallowed up by Geneve. It will appear next month.

PROGRAM REVIEW: BY JOHN BEHNKE

NAME: HIGH GRAVITY
TYPE: Education/Entertainment
COST: $14.95

MANUFACTURER: Asgard Software, P.O. Box 10306, Rockville MD 20850
REQUIRES: 32k, Disk System, Joystick, and X-Basic, E/A, or TI-Writer.

The first time I saw this program was at the 1986 Chicago TI Faire. It was demonstrated and was one of the best programs I had ever seen that was written in the c99 programming language. What this program does is to allow you to set up a solar system and see (graphically) what effects gravity has on moving objects. If you think of the program this way, then you can consider it to be educational and a very good example of the laws of gravity and motion. You should not assume that this program is just another educational program and leave it at that. The manual states this much:

As your shuttle sails through the empty reaches of unexplored space your display screens begin to tell the story. Your radar has detected the crippled space station.

You must re-supply this station with supply capsules. Thought of in this way, the program is entertainment. In either case, it interested me enough to obtain it. Like I said before, you must supply the space station with supplies from your ship. To do this, you simply use your joystick to aim the capsule in the proper direction. Keep in mind that this may not be as easy as you think. Because of the planets gravity fields, the proper direction usually is not the direct route. I have had to aim my capsule in the opposite direction at times and often my capsule would get caught in a planets gravitational field and go into orbit around the planet. All of this is shown on the screen and your capsule leaves a trail of dots so you may trace the path of your capsule. The planets range in size from small to very large with the largest planets having the strongest gravitational fields around them. The program also allows you to set up your own solar systems and save them to disk for later use. You can also change several options in the program to set up many different situations. You can change the initial velocity or speed in which the capsule leaves your ship, the density of the planets, the scale or number of decimal places the program uses, the speed of the simulation, the number of planets, the number of capsules, the planet separation, and there is even a debug mode. After you run out of capsules (the end of game) you can randomly redraw a new solar system, re-start the same game, recall a saved system, save current system, or set up your own system. You can see that this is a very complex program but by using the random option, you can ignore these options if they prove to complex for you and simply have fun with the program like I did. The program will auto load in X-Basic and I was up and running in (2) minutes. You will find on the disk many pre- set up solar systems that will demonstrate many interesting and wild solar systems.

In summary, I found High Gravity to be a truly unique and amazing program. I've seen many programs of this type but this is the best. [END]

PRACTICAL PROGRAMING PRACTICES

TI-Artist Printer. The short program below will allow you to print out a TI Artist Picture using any density. It will also allow you to "Stretch" out the picture to various lengths. I wrote this program to allow me to print out a picture that is dark but not distorted. You'll find that this program is quite slow but it can be very useful in the creation of titles and dark graphics needed for quality reproduction

To Use: Load your picture into TI-Artist. Hit "C" to print picture to printer. When it asks for the device name, type DSKx.filename to send the output to disk instead of printer. Run this program and use the filename you saved it under. Magnification and Density value MUST be 1

```
100 !++++++++++++++++++!
110 ! "Artist Printer" !
120 !  By John Behnke  !
130 ! Requires: Gemini !
140 !   and TI Artist  !
150 !------------------!
160 ! Directions: Save !
170 ! Picture to disk  !
180 !using defaults and!
190 !this program will !
200 ! print picture in !
210 !   high density   !
220 !++++++++++++++++++!
230 CALL CLEAR
240 INPUT "INPUT NAME? ":W$
250 INPUT "DENSITY (1-3)?":D
260 INPUT "WIDTH (1-5)? ":DD
270 FOR I=1 TO D :: READ D$
280 NEXT I
290 DATA K,L,z
300 OPEN #1:W$,VARIABLE 128
310 OPEN #2:"PIO.CR.LF"
320 IF EOF(1)THEN 390
330 LINPUT #1:A$
340 IF LEN(A$)=111 THEN 330
350 IF LEN(A$)<>4 THEN 370
360 A$=CHR$(27)&D$&CHR$(0)&C
HR$(DD)
370 IF (LEN(A$)>4)*(DD>1)THE
N 410
380 PRINT #2:A$ :: GOTO 320
390 CLOSE #1 :: CLOSE #2
400 STOP
410 FOR J=1 TO LEN(A$)
420 Z$=SEG$(A$,J,1)
430 PRINT #2:RPT$(Z$,DD)
440 NEXT J :: GOTO 320
450 END
```

```
100 REM !++++++++++++++++++!
110 REM !    "Gridsheet"   !
120 REM ! By John Behnke   !
130 REM ! Prints six side  !
140 REM !   graph paper    !
150 REM !on an Epson, TI,  !
160 REM !or Star Printer.  !
170 REM !   Basic or XB    !
180 REM !++++++++++++++++++!
190 CALL CLEAR
200 INPUT "Size? (1-3):":S
210 FOR I=1 TO S
220 READ W,X,Y,D$
230 NEXT I
240 DATA 7,128,3,L,4,0,2,K,4
,0,2,K
250 J$=CHR$(27)
260 A=1
270 A$=A$&CHR$(A)&CHR$(A)
280 B$=B$&CHR$(128/A)&CHR$(1
28/A)
290 A=A*2
300 D$=D$&CHR$(0)&CHR$(0)
310 IF A<129 THEN 270
320 C$=CHR$(255)&SEG$(D$,1,1
5)
330 FOR I=1 TO W
340 E$(1)=E$(1)&A$&B$
350 E$(2)=E$(2)&C$&D$
360 E$(3)=E$(3)&B$&A$
370 E$(4)=E$(4)&D$&C$
380 NEXT I
390 A$="HIT FCTN 4 TO STOP"
400 PRINT : :A$: :
410 A$=J$&D$&CHR$(X)&CHR$(Y)
420 OPEN #1:"PIO.CR.LF"
430 PRINT #1:J$;"3";CHR$(16)
440 FOR J=1 TO 4
450 PRINT #1:A$;E$(J);E$(J);
E$(J);E$(J)
460 I=I+1
470 PRINT #1:CHR$(13);CHR$(1
0)
480 IF I=S THEN 500
490 IF (J=2)+(J=4)THEN 450
500 I=0
510 NEXT J
520 END
```


Spider Bop. This program is written in the c99 programing language. To run, you must have version 3.0 or higher and the subprograms on your disk called "GRF1RF", "RANDOM;C", and "CONV;C" or the program will not compile properly. Do not capitalize anything unless it's listed that way. This program is a direct conversion from my BASIC Spiderbop. At the time I converted it, there were no sound routine available for c99 so I used the primitive BEEP and HONK which does not make for very good sound effects. IF you have the sound routines, you may want to add your own sound to the program. Good Luck! -John Behnke

```
#asm
 REF C$GPLL
HONK BL @C$GPLL
 DATA >36
 B *13
#endasm
#include "dsk2.grf1rf"
#include "dsk2.random;c"
#include "dsk2.conv;c"
int z,temp,a,b,c,e,k,s,j,tt,flg;
int d[32];
char score[8];
main()
{
while (0==0)
{ clear(); grf1(); screen(2);
  chrdef(096,"1818181818181818");
  chrdef(097,"000000FFFF000000");
  chrdef(104,"6699997E5595A5A5");
  chrdef(112,"3C7EFFFFFF7E3C3C");
  chrdef(113,"3C3C7EFFFF7E3C3C");
  e=0;
  b=12;
  tt=0;
  while (e++<9)
  { color(e+4,16,1);
  }
  color(13,16,1);
  color(14,14,1);
  color(15,3,1);
  e=0;
  while (e++<33)
  { d[e]=3;
  }
  locate(4,10);
  puts("SPIDER BOP 2");
  locate(22,5);
  puts("USE <ARROW> KEYS TO MOVE");
  locate(8,8);
  puts("WRITTEN WITH C99");
  locate(9,9);
  puts("BY JOHN BEHNKE");
  locate(24,3);
  puts("PRESS <ENTER> TO BOP SPIDERS");
  locate(12,11);
  puts("SPEED 0-9?");
  k=0;
  while ((k<48)|(k>57))
  { k=key(0,&s);
  }
  j=k-47;
  j=j*100;
  clear();
  locate(1,10);
  puts("SCORE:");
  hchar(3,1,96,32);
  hchar(4,1,104,32);
  hchar(24,b,112,1);
  randomize();
  a=rnd(32)+1;
  flg=0;
  while (flg==0)
  { a=rnd(32)+1;
    ++d[a];
    k=0;
    while (k<j) { ++k; }
    vchar(d[a]-1,a,96,1);
    vchar(d[a],a,104,1);
    k=key(0,&s);
    while ((k==68)|(k==83))
    { hchar(24,b,32,1);
      if (k==68) { ++b; }
      if (k==83) { --b; }
      if (b==0) { b=32; }
      if (b==33) { b=1; }
      hchar(24,b,112,1);
      k=0;
    }
    if (k==13)
    { k=24;
      temp=5;
      while (--k>temp)
      { hchar(k,b,112,1);
        z=0;
        while (z<50) { ++z; }
        if (k==d[b])
        { honk();
          z=0;
```

```
      while (z<300) { ++z; }
      d[b]=d[b]-3;
      if (d[b]<5) { d[b]=-5; }
      vchar(d[b],b,32,23-d[b]);
      vchar(d[b],b,104,1);
      locate(1,15);
      temp=24;
      itod(++tt,score,6);
      puts(score);
    }
  }

    while (k<24)
    { hchar(k++,b,32,1);
      z=0;
      while (z<50) { ++z; }
    }
  }

    if (d[a]==24)
    { hchar(24,a,32,1);
      k=0;
      if (a>b) { k=-1; }
      if (b>a) { k=1; }
      while ((k!=0)&(a!=b))
      { a=a+k;
        hchar(24,a,104,1);
        z=0;
        while (z<j) { ++z; }
        hchar(24,a,32,1);
      }
      hchar(24,a,104,1);
      locate(1,10);
      puts("  GAME OVER  ");
      locate(20,5);
      puts("PRESS <ENTER> TO REPLAY.");
      k=0;
      while (k!=13)
      { k=key(0,&s);
      }
      flg=1;
    }
  }
}
}

/* End of Program */
```


L. L. CONNER ENTERPRISE

Computer & Electronics

1521 Ferry Street * Lafayette, Indiana 47904

TI-99/4a HOME COMPUTER
SOFTWARE PERIPHERALS
AND ACCESSORIES

Software for $15 ea	Hard to find items	
Frogger	P-Code Card W/Manuals	$159
Q'Bert	TI-Extended Basic	39
Pac-Man	TI RS232 Card (u)	95
Centipede	TI Controller Card (u)	60
Music Maker	TI Consoles (u)	60
Software for $10 ea.	TI Modem	60
Rabbit Trail	Wico Trackball	20
Princess&Frog	Power-Stick	12
Ant Eater	TI Joysticks	10
Men Picked	TI-writer Manuals	10
Rotor Raiders	MultiPlan Manuals	10

9900 Series Chips
9900, 9901, 9902, 9904, 9918, 9927, 9928, 9937, 9995

Prices are subject to change without notice,add $3 S/H UPS.
(317)742-8146 * Call for Our Catalog * (317)423-4879

THE PASCAL ADVENTAGE

MIKE MARKIMIK

Last meeting a few pepole attended the SIG. Even though the attendance was little, I still managed to get another few people introduced to the p-system. One of the files I had was a startup file called SYSTEM.STARTUP. But a while back I got an idea while looking at the CHAIN command. What CHAIN does is take anything within the parameter, E.G. CHAIN('myFile.code') and put it in a queue. when the program is over, the system reads the queue and executes whatever is in the quotes. But that is not all. You can use CHAIN as many times as you want to, since the string itself is put in a queue and is permenently stored there until it is read and executed by the system. In addition, you can also use ANY of the commands that are used for the X)ecute command. These commands are:

L=LIBRARY.CODE (LIBRARY.CODE is the library I chose for this example)
I=sysinput.text (system input file)
O=sysoutput.text (system output file)
PI=REMIN: (redirection from the RS232 port)
PO=REMOUT: (redirection to the RS232 port)

There is no limit to how many times you can use the CHAIN procedure, except for the heap size itself. HEAP? Well, remember last month I talked about data structures? A HEAP is a data structure, linked by pointers. It is a binary tree and is used to store system QUEUES, STACKS, LINKED LISTS, TREES, and GRAPHS. When used correctly, the heap can be extremely useful to an experienced programmer. Be thankful that it exists, for without it we could not have many of the features the p-system provides. Well, back to chaining. If we make a SYSTEM.STARTUP code file by compiling this program:

```
Program Startup;
Begin
     CHAIN('I=SYSINFO.TEXT');
END.
```

as soon as the system is booted, warm or cold, this file will be executed. What it will do is read a M)onitor file called SYSINFO.TEXT and execute the commands within it. You can really turn on the computer and let it do anything you wish, just by changing the contents of a monitor file. So what does this have to do with printer setup and/or root volume setup and/or date setup? Well, you can create a M)onitor file, and type the commands to X)ecute the Utility MODRS232.CODE and save the keystrokes. You can then enter the filer and do the Set P)refix command to set the default prefix. To change the date, smply write a program to read your time card (if you have one) in assembly

language, assemble it and link it with a calling routine. The date is stored on sector 0 track 0 of the Root volume, and by doing a BLOCKREAD and BLOCKWRITE to the ROOT volume, you can easily manipulate the time and date settings. I have an ADE clock card and that requires CRU bit switching. It was a simple mater to turn off the p-code card by a SBZ instruction and when I was done, turn it back on by a SBO operation in assembly language. I can compile and Link this file and put it in the chain command and have it executed. The results of all this nonsense: I have my printer ports set up, I have the root vlume set up and I have the current date in the computer. This is only the beginning, for you can do anything. If you like, you can have the M)onitor command on while doing a routine demonstration of a software peice you designed. Then, after doing an entire demonstration, you can save the monitor file and X)ecute the file. To make things more interesting, you can even include a CHAIN command in your demo program that contains a system input command identical to the one you typed for X)ecute. this way, you can chain you demo program infinitly, without harming memory. Every time the program executes, it chains the monitor file which executes the demo which chains the program input file which executes the demo... Of course, you can clear the queue's entries by CHAINING the empty string. This clears the last entry in the queue: in the example, you can have a command to exit if you wish by clearing the queue. This can be based by time clock, lack of interest in the prgram, power failure, external device, and so on. There really is no limit to what you can do with these two exciting commands. They open a whole new world in batch processing.

N Now on to other things. The music program is getting off the ground. Now all I have to do is dress up the input part of the program. The input program wil use ICONS and the joystick or other device to place notes on the staffs. You can select the key signature, time signature, volume level, dynamics, accidentals, and even tied notes as options. as you input notes, they are saved in a disk file. this file contains records in this format:

```
TYPE MUSIC=FILE OF RECORD
                BEGIN
                     FREQ:INTEGER;
                     DURATION:INTEGER;
                     NOTETYPE:INTEGER;
                     VOICE:INTEGER;
                     VOLUME:INTEGER;
                END;
```

When a FILE of this TYPE is written, it store much information about a song. The FREQ field is the note's frequency. The DURATION is the note's duration, from 1 to 16, in beats. The NOTETYPE parameter is used now to determine whether or not the note will be tied or untied to the next note. It may also have other uses in the future. Presently a value of zero means note, a value of one means tone. For Voice, a value of one means voice one, a value of two means voice two, and so on. It is used to determine which sound list will be played on a particular voice. The next paramster is the dynamic volume parameter. If this parameter changes to a greater value from one note in a voice to the next note in that same voice, the dynamic is an increasing one and the music will get louder. Consequently, if this value changes for the

lower value in the same way, the sound volume will be decreased as the music plays. Note that the change is instant so to recieve a gradual effect, start with a high value and decrease one digit every few notes or so, depending on the length of the dynamic. The allowed values here are 0(softest) to 15(loudest). These are really all that are needed. The second program will create the sound linked lists themselves in main memory and allow you to manipulate them, such as chaining, REFRAINS, and Saving and Loading of other sound lists. You will even be able to do transposition of the music, and there is a high probability of a program to pring the sound lists in manuscript form. Collect ytou favorite 3 and 2 part harmony songs, people! We will have to storm the TI world with beautiful music!!

Finally, a few days ago I recieved a bit of freeware from a friend for the p-system. It is a tax anay!lysis program and a spreadsheet program called HONEYCOMB. It was written for an IBM PC under p-system version 3.0 and it is pure pascal code, so it will compile and run on the TI. It really is nice. I'll bring it to the sept. meeting for all you interested folks. This one will run on a MYARC GENEVE too!!

If you have written me letters, I will respond as soon as possible. I know some of you have requested disk software, but I have only so much cardboard!! I will try to get them to you as soon as possible. HAVE FAITH! If you like, leave a message on our BBS at 966-2342. I'm the FROGMAN or SCUBAMANIAC #318. See ya all later!!!

P.S.

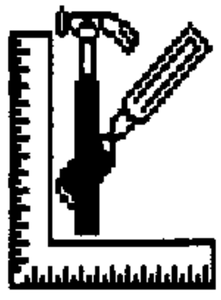
Type in this program with the editor and compile it. Then R)un the program or X)ecute it. You'll see an interesting display of medium resolution graphics. Type it in exactly as listed.

```
{R-}
Program LowResDemo(Input,Output);
Uses Support;  (* remember, SYSTEM.LIBRARY must be in drive 1 (unit #4) *)

VAR Row,Col:Integer;
    Color:Char;
    F:text;
    A:string[16];
Procedure InitScreen;
Var X,Y,Z,t,f:integer;
Begin
     Set_Screen(2);
     For x:=1 to 6 do
        For y:=1 to 4 do
           Begin
                GotoXY(0,(x-1)*4+y-1);
                t:=(x-1);
                f:=t+32;
                For z:=f+(32*(f div 128)) to f+(32*(f div 128))+31 do
```

```
                    Write(chr(z));
               end;
          For x:=32 to 127 do
             Set_Pattern(x,'00');
          For x:=160 to 255 do
             Set_Pattern(x,'00');
          Set_Screen(3);
end;

Procedure SetPixel(Row,Col:integer; Color:Char);
Var Chara:integer;
    a:String[16];
Begin
      Chara:=32+((row div 8)+(col div 2));
      Chara:=Chara+32*(chara div 128);
      Get_Pattern(Chara,A);
      A[(2*((Row mod 8)+1)-1+(col mod 2))]:=color;
      Set_Pattern(Chara,A);
end;

Procedure HLin(VAR Row,Col:integer; Color:Char; R:integer);
Var C:integer;
begin
     For c:=col to col+r do
        SetPixel(Row,c,Color);
end;

Procedure VLin(VAR Row,Col:integer; 'olor:Char; R:integer);
VAR c:integer;
Begin
     For x:=Row to Row +r do
        SetPixel(c,Col,Color);
End;

Procedure SaveScreen;
Var x:integer;
Begin
      Rewrite(f);
      For x:=32 to 127 do
         Begin
              Get_Pattern(x,a);
              Writeln(f,a);
         end;
end;

Procedure LoadScreen;
Var x:integer;
Begin
     Reset(f);
     For x:=32 to 127 do
        Begin
```



```
              Readln(f,a);
              Set_Pattern(f,a);
         end;
end;


Begin (*main program*)
SaveScreen;
InitScreen;
Set_Scr_Color(7,1);
Color:='0';
Col:=0;
Row:=0;
While col<63 do
     Begin
          VLin(Row,Col,Color,47);
          Col:=Col+2;
          If Color='9' then color:='A' else
          if Color='F' then color:='0' else
          Color:=Succ(Color);
     End;
Color:='0';
Col:=0;
Row:=0;
While Row<=47 do
     Begin
          Hlin(Row,Col,Color,63);
          Row:=Row+2;
          If Color='9' then Color:='A' else
          if Color='F' then color:='0' else
          Color:=Succ(color);
     end;
Set_Screen(2);
LoadScreen;
Page(output);
end.
```



HARD TIMES

Al Slump

This is the end of the summer and it has been a hectic one. I have not seen heat the likes of this summers in many years. I hope that most of you changed the power supplies in your consoles to the cool ones from Radio Shack. Some of my buddies in the User Group did not and unless they had central air or cool basements, had to limit the time on the system. There is still time to get the supply in and it can still save a lot of heat and attendant damage to your

consoles.

This months column won't be very long for reasons of time and health, but first I want to dispell a rumor. Yes, I did build a clone. No, I am not giving up my TI. But if you have been watching the bulletin boards, you have seen a lot of complete systems for sale. Some of them have been real bargains. I bought one for my youngest son. So many of you out there with consoles and cassettes can upgrade your systems for much less than ever before. What I am going to talk about briefly is the upgrade potential and what constitutes a good bargain. Also I will touch on some up comming options that may affect your purchasing patterns.

Let's start with a owner of a basic console and tape storage. If you see a P-Box (Peripheral Expansion box) for sale you are definitely interested. It should been in the $250-300 price range if it is in good used condition. In like new condition expect to pay up to $50.00 more. At those prices it should contain 32k memory, disk controller, single sided/single density floppy drive and console interface card. If you see a system in this price range that has more, for example an RS232 card, jump on it because it is a bargain. The RS232 card should normally add $60-70 to the price. The RS232 card is required for data communications and to hook up most printers. You may also find systems that have double sided drives, this makes the system a bargain because it gives you more storage. If you want double density, look for a system with a Myarc or Cor-Comp disk controller. These controllers add value to the system also, but at a cost. They do not work with all software. You will find that most disk managers and copiers will only work with the TI disk controller. Myarc and Cor-Comp both supply their own disk managers with their cards. As a matter of fact, I just received a mailing from Triton Products listing the Myarc disk controller for $99.00 if you really want one.

Once you get past the disk sub system, many variables come in so I will try to give a few guidelines to keep in mind when checking the prices. Most people selling out their entire systems will include all their software. Look especially for Extended Basic, TI-Writer and Multi Plan. If the owner has all three, expect to add up to $50.00. Some will just throw them in, it depends on the seller. The game cartridges I don't even consider normally except for Chess and Music Maker. Personal Record Keeping and Report Generator are good to have but don't pay too much for them. If the seller has a console, expect that to be thrown in, and hold on to it for a spare. You never know when you will need one.

If you are lucky, you will find a system that includes other goodies such as a modem (MOdlator/DEModulator) which is a must if you want to dial into a bulletin board. The TI acoustic modem should add $15-25.00 a more sophisticated one 1200 baud, auto-dial will add more to the price. Look for Hayes compatibility when judging the value. Also consider that 1200 baud will generally transfer almost 4 times faster than 300 baud. Think in terms of phone bill when estimating what it is worth. Make sure you get the documentation from the seller also, because the features such as auto dial will need special commands and software such as Mass-Transfer needs the commands which are appropiate for the modem. Don't get hung up on a TE-II cartridge, there is much better software out there than that. Give it a value of $15-25.00, no more than

that. I keep mine for sentimental reasons only.

You may find other goodies, such as ram disks(Horizon, Myarc and Cor-Comp). These will add value, dependant on the size. They could add as much as $200.00 for 256k Horizons or 512k Myarcs. The Myarcs will lose their contents when the system is powered off unless you have a separate power supply which is constantly on hooked in the back of the card. The Horizons have rechargeable Ni-Cads so they will hold their contents if the batteries are charged up. Other more exotic goodies out there are the P-code card ($100.00) with documentation, Forti music card ($125-150.00) and there are others too numerous to mention. Before you buy, consult a knowledgable friend if you are unsure about what you are getting.

The last topic of discussion on used systems will be a quick check out. It is easier to get problems resolved if you check things out before you pay and drive away. Once you are home and find a problem it will mean at least a trip back to the seller, and lets face it, being a good guy (person) was not a prerequisite to purchase a TI. So you may just be unfortunate enough to run into an unscrupulous person. So lets check out the system. Have the seller show you how to hook up everything. Then write a short program in basic or extended basic. Make sure you can save it to disk and call it back. If there is a printer see if it prints. Printers vary so much in price I didn't even mention them. But make sure it works. Gemini and Epson are good names, but there are others just as good, so consult a friend. Oh by the way, a monitor is better than a tv so if one is in the system grab it. Once you make sure everything works, pay the seller, get a receipt and run home with your goodies.

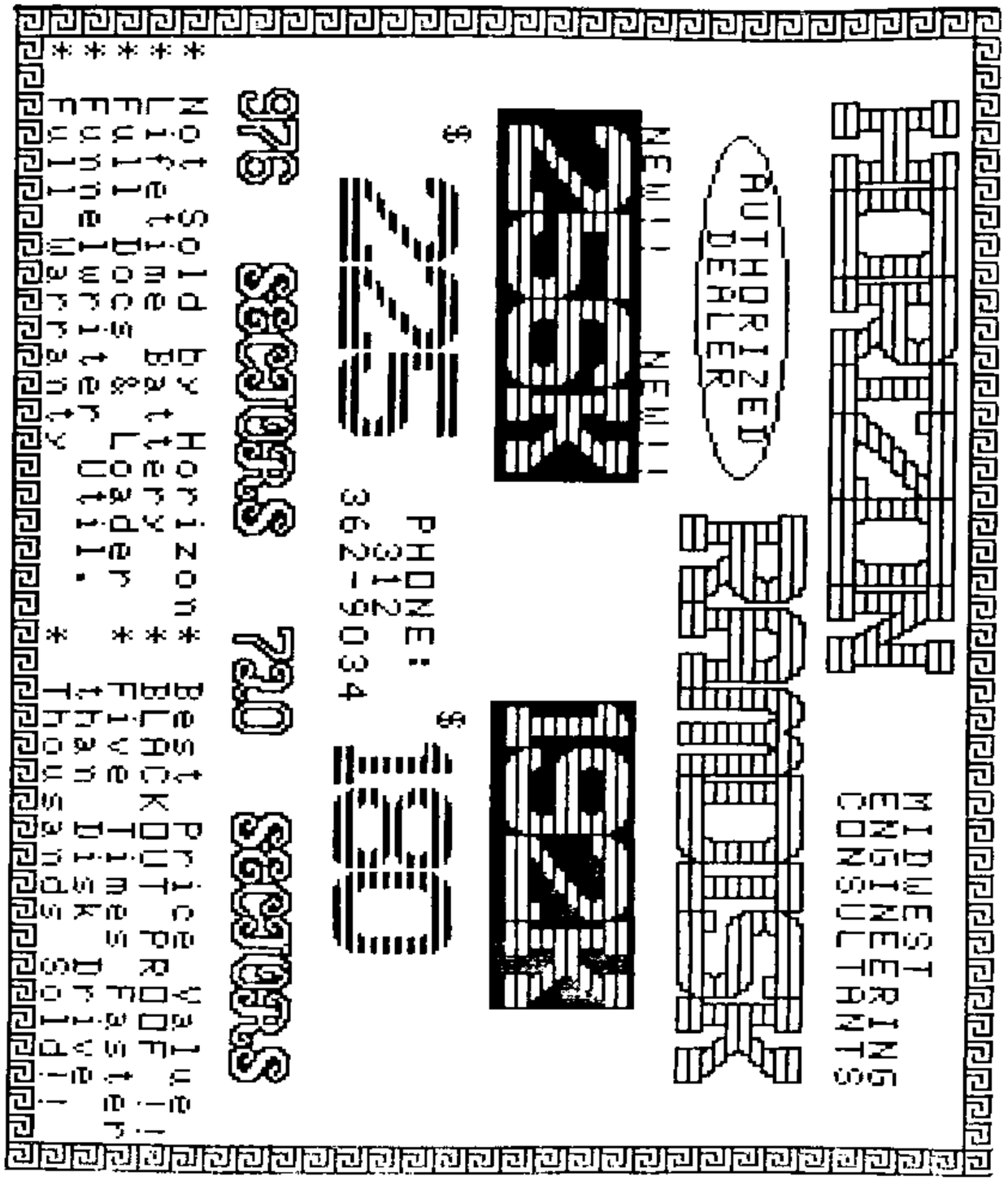
Just as there may be unscrupulous sellers, there may be unscrupulous buyers so don't be upset if the seller asks for cash. He may not know you and he wants to make sure he has no problems getting his money. So if he asks for cash understand his position.

NEW THINGS TO COME

Myarc has released their 9640 computer which can be added to your P-Box. Check around for prices. Lake Computer Depot's prices have been very competitive. Myarc is also supposed to be releasing a hard disk controller card which will also support floppy drives as well as a tape back up unit.

Data Biotics is rumored to have a ram disk in the works and soon to be released. It is supposed to be battery backed up and price competitive with the Horizon with expansion capacity of 512k. Keep your eyes open for this one, it sounds like a good deal.

Well so long for now. If you have questions for me leave E-mail (private) on the group BBS at 312-966-2342. My number is 330. See you at the FAIRE.....



MODEL 99/105 KEYBOARD ENHANCEMENT - $199.95

NEW!

INCLUDES custom keyboard.

The following are features of the MODEL 99/105 KEYBOARD ENHANCEMENT...

* * INTERFACE BOARD CARD AND/OR INSTALL. ASSY IN CONSOLE WITHOUT SOLDERING.
* * 101 KEY KEYBOARD WITH 24 FUNCTIONS.
* * COMPUTER SINGLE KEY ENTRY OF ALL TI-WRITER, MULTIPLAN, AND EDITOR/ASSEMBLER COMMANDS.
* * ATTRACTIVE LOW PROFILE KEYBOARD WITH ADJUSTABLE TILT ANGLE AND 6 FT. CORD.
* * DETACHABLE NUMERIC KEYPAD WITH NUMERIC OPERATORS.
* * DEDICATED CURSOR CONTROL KEYS.
* * ENLARGED RETURN, SHIFT, AND CONTROL KEYS.
* * OPTIONAL USER INSTALLED RESET AND LOAD INTERRUPT CAPABILITY FROM KEYBOARD.
* * DETAILED INSTALLATION AND OPERATING INSTRUCTION MANUAL INCLUDED.

KEYBOARD INTERFACE CARD - $149.95

NEW!

* * Interface card installs in 44 console in place of old keyboard and allows use of any IBM PC/AT compatible keyboard with your 99/4A. Interface card supports all 83 standard PC/AT key codes.
* * Comes with complete, easy to follow installation and operating instructions. NO SOLDERING REQUIRED.
* * Optional user installed RESET and LOAD INTERRUPT capability from keyboard. Complete instructions included.

KIT AVAILABLE

* * Includes printed circuit board, complete instruction manual, and RAVE 99 custom chips. Hard to find hardware also included. Requires only assembly and about $15.00 to easy to find components to complete. $ 99.00

* IBM & PC/XT are trademarks of International Business Machines

some "RAVE" reviews!

"...I wonder how I have managed all on a time zero longer have to go through ... awful contortions ... an absolute joy!" D.R. Harrisburg, PA

"...The keyboard is everything you say it is and more...performs exactly as advertised ... has operated flawlessly." J. C. Burlington, Ont.

"I must write to you back to the original ... Wisconsin, WI

"Sorry, only 2 reviews of keyboard ... working but superlat ... I have already ... a time to put my ... Inglewood, Ont.

"...this keyboard is fantastic ... Work is huge, West Germany

"...[illegible] ... of its way beyond ... I [illegible] ... this problem into the 'new' ..."

SATISFACTION GUARANTEED!

RAVE 99

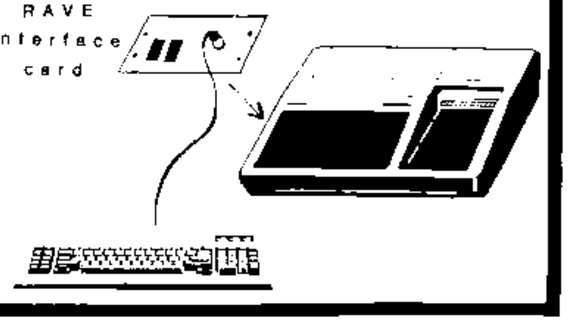
112 RAMBLING ROAD
VERNON, CT 06066

(203) 875-9833

[illegible]

VISA & MasterCard Accepted

EASY INSTALLATION



CHICAGO TI USER'S GROUP
P.O. Box 578341
Chicago, Il 60657

REMarks:

Well, here is the issue that you've been waiting for, the SUPER SUMMER ISSUE of the Chicago TImes. This is the issue that almost wasn't thanks to floods and non working computers. My 4A succumed to the flood waters and I was left to complete this issue on a very frustrating GENEVE.

Thanks to all those who contributed from all around the country to make it the issue it turned out to be. This is the largest issue that the Chicago Group has ever put out and considering that many people think of the TI as a dead machine, this is quite an accomplishment. This is evidence that the interest level in the TI is still there and ever increasing.

This newsletter was done on the successor to the 99/4A, the Geneve 9640. The article on my initial reaction to this machine appears elsewhere but it is intended as a first impression and not as a guide to what the 9640 will be able to do.

Myarc knows of the machines shortfalls and is ever working to improve it. I understand that there have been two or three additional releases of DOS since I have received mine. I expect to have updates to my operating systems shortly.

The 99/4A will continue to be the major focus of this publication although we do hope to bring you articles of interest to owners of the 9640.

We'll be looking forward to seeing everyone at the meeting in September.